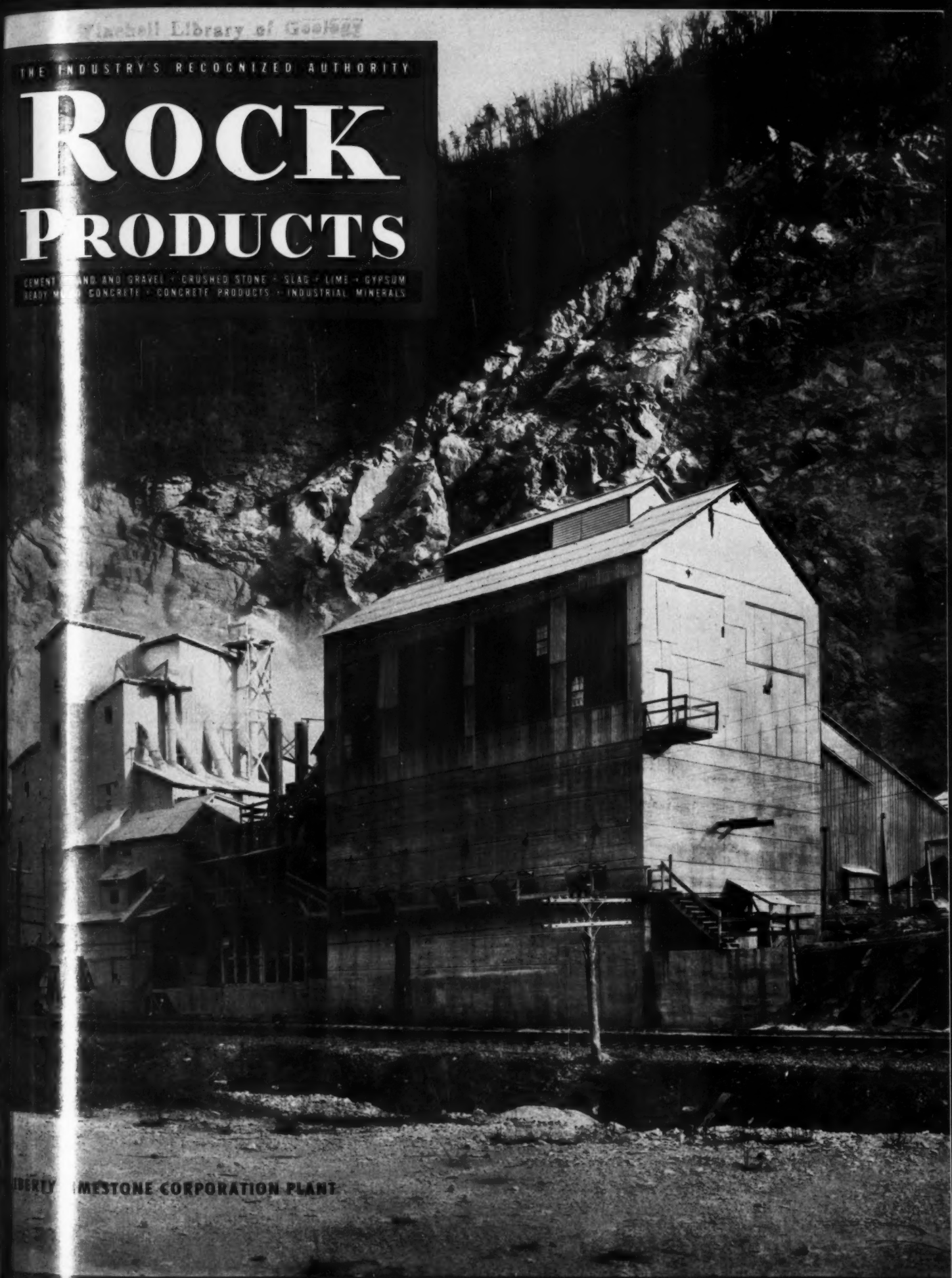
THE INDUSTRY'S RECOGNIZED AUTHORITY

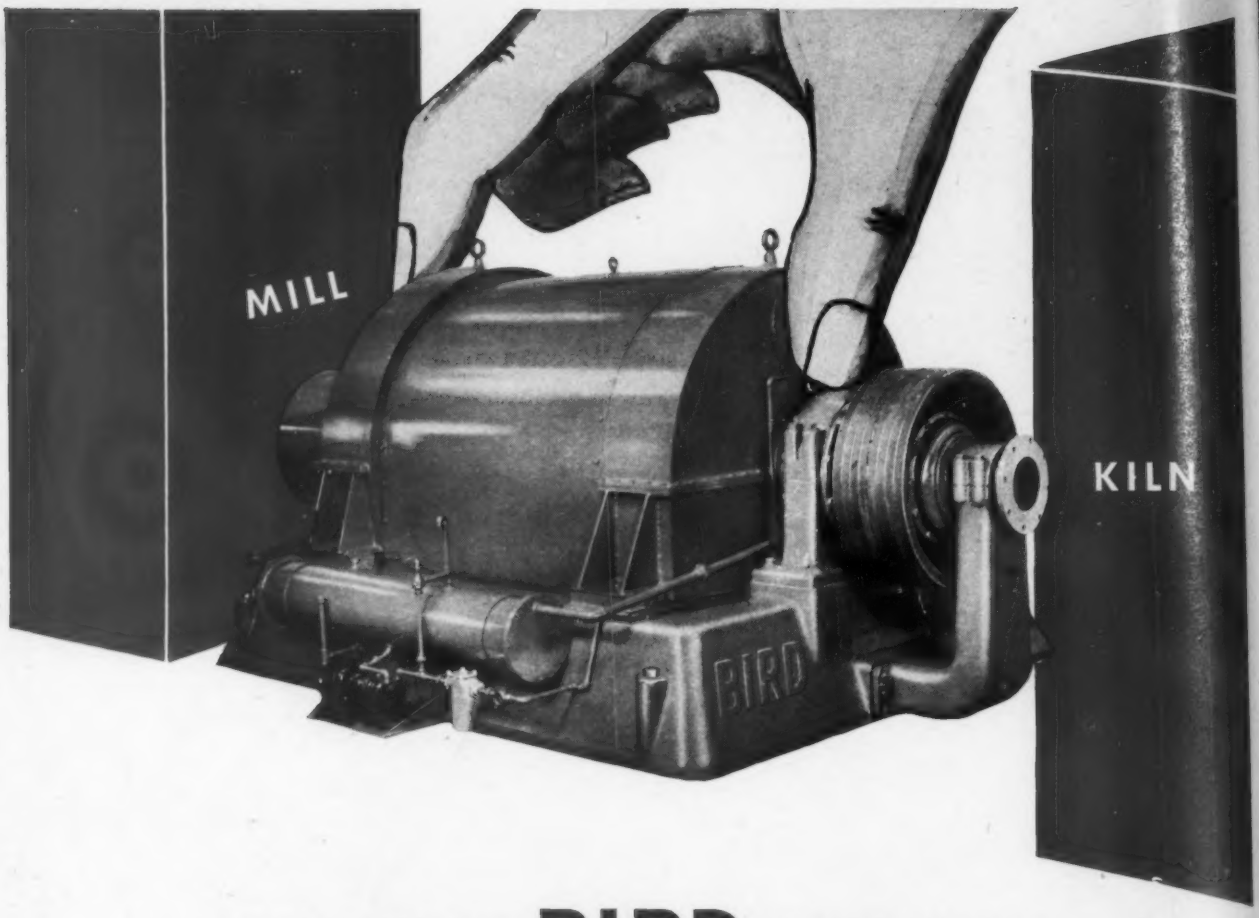
ROCK PRODUCTS

CEMENT · SAND AND GRAVEL · CRUSHED STONE · SLAG · LIME · GYPSUM
READY MIXED CONCRETE · CONCRETE PRODUCTS · INDUSTRIAL MINERALS



LIBERTY LIMESTONE CORPORATION PLANT

AGSTONE INDUSTRY MUST TRIPLE PRODUCTION · APRIL 1946



PUT THIS BIRD BETWEEN *YOUR* MILL and *YOUR* KILN

The Bird Centrifugal Classifier fits into your grinding circuit so naturally and profitably you'll wonder how you ever got along without it.

It handles the slurry at mill consistency — with the clay already in the feed, if desired.

The fines are all ready for efficient burning. No thickening is necessary.

The oversize goes back to the mill so clean that milling efficiency and capacity are substantially increased.

The BIRD fits in anywhere, is self-contained and continuously automatic in action. Operating and maintenance cost is very low.

A complete, illustrated Bulletin on the Bird Classifier is just off the press. For your copy, write Bird Machine Company, South Walpole, Massachusetts.

The BIRD Centrifugal CLASSIFIER

Rubber fingers move a mountain of milk

A typical example of B. F. Goodrich product development

THE higher the better — that's the way the warehouse operator felt about thousands of cases of evaporated milk that had to be stacked in the warehouse. The higher the stacks, the more goods can be stored in a given floor space.

But the height has always been limited by the stacking equipment. Belt conveyors have long been used. But the smooth surface of the conventional belt would hold boxes only when the incline was slight — too steep a pitch and the boxes slipped down the conveyor.

The company that manufactured the machine in the picture, a "Rapid Power Booster" (T. M. Reg.), came to B. F. Goodrich and found that they had already developed a belt—called Griptop—for handling bags of sugar, that grips the bags with thousands of tiny rubber fingers. A trial belt was installed on a Power Booster and carried cartons up a *35 degree grade.*

Thousands of these belts are in use today, carrying bags, boxes, cartons, baggage, coal, even ice — up grades that couldn't even be attempted with smooth surfaced belts. Like the 35,000 other B. F. Goodrich industrial products, their sole purpose is to increase efficiency and economy for American industry. Ask your B. F. Goodrich supplier for help with any problem that involves the use of rubber. *The B.F. Goodrich Company, Industrial Products Division, Akron, Ohio.*

B.F. Goodrich
RUBBER *and* SYNTHETIC *products*

VOLUME 49

ROCK PRODUCTS

APRIL, 1946

NUMBER 4

this month

ROCK PRODUCTS is published monthly by MACLEAN-HUNTER Publishing Corporation, 309 West Jackson Blvd., Chicago 6, Illinois; Horace T. Hunter, President; John R. Thompson, Vice President; J. L. Frazier, Secretary. Entered as second-class matter, Jan. 30, 1936, at the Chicago, Ill., post office under the act of Mar. 3, 1879.

SUBSCRIPTION INFORMATION

Subscription Price: United States and Possessions, Mexico, Cuba, Canada, $2.00; and $4.00 foreign countries. Twenty-five cents for single copies. Indexed in the Industrial Arts Index.

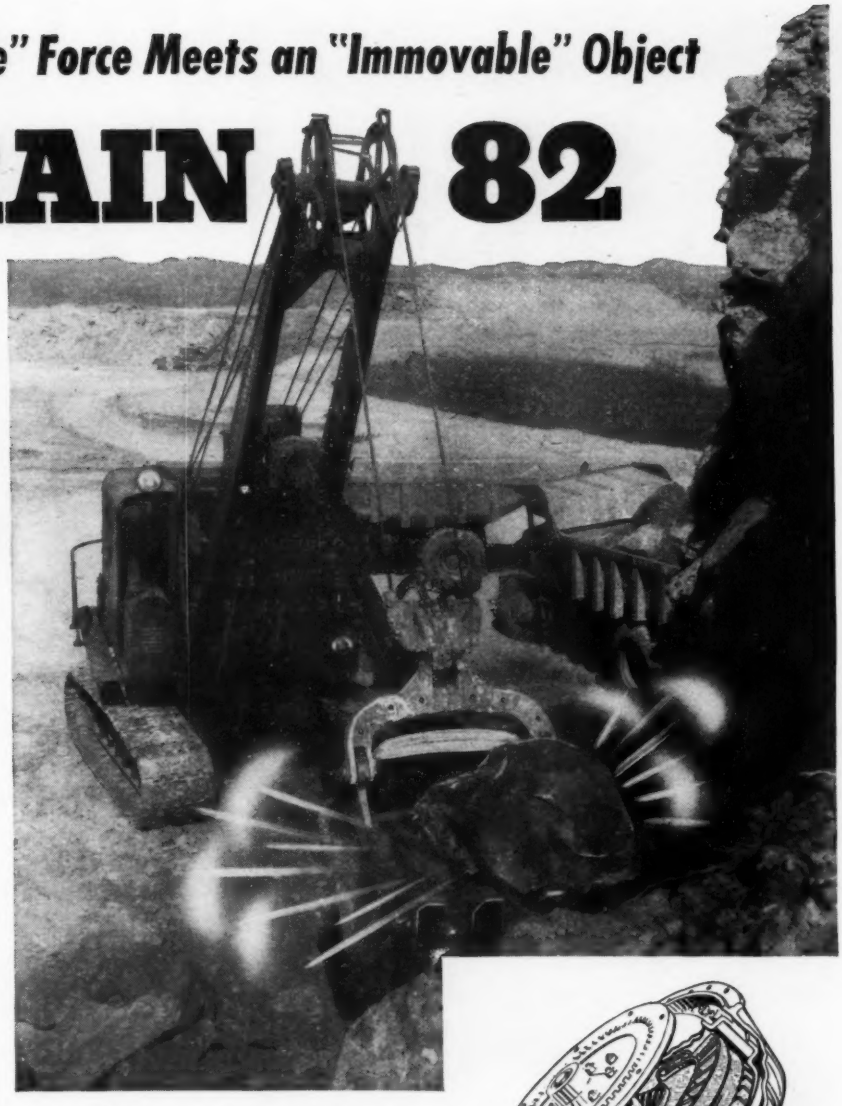
Canadian subscriptions and remittances may be sent in Canadian funds to ROCK PRODUCTS, P. O. Box 100, Terminal "A," Toronto, Canada.

To Subscribers — Date on wrapper indicates issue with which your subscription expires...In writing to have address changed, give old as well as new address.

When an "Irresistible" Force Meets an "Immovable" Object

A LORAIN 82

"Rides with the Punch"



When the big dipper at the end of a powerful 2-yd. Lorain-82 slams into a big boulder or rigid rock strata, something is going to give. Usually it's the rock, but the terrific impacts and shocks can be mighty unhealthy to a shovel and its "innards".

A Lorain-82 Rock Shovel is engineered throughout to take these beatings. What's more, it cleverly *"rides with the punch"!*

Why? Because a hydraulic coupling (see diagram) acts as a shock absorber to cushion blows and shocks, to protect the cables, boom and power mechanism. Lorain engines can't stall in rock or any other digging! Their action is smooth as oil.

Your nearest Lorain distributor can explain the numerous mechanical advantages that insure the long life, low repair and maintenance cost, and the operating speeds which have made Lorains so predominant in brutal rock work.

Thew-Lorain was first with the Hydraulic Coupling which not only delivers tremendous digging power, but provides defense mechanism to cushion and absorb return wallops and strains.

Get the Facts and You'll Get a...

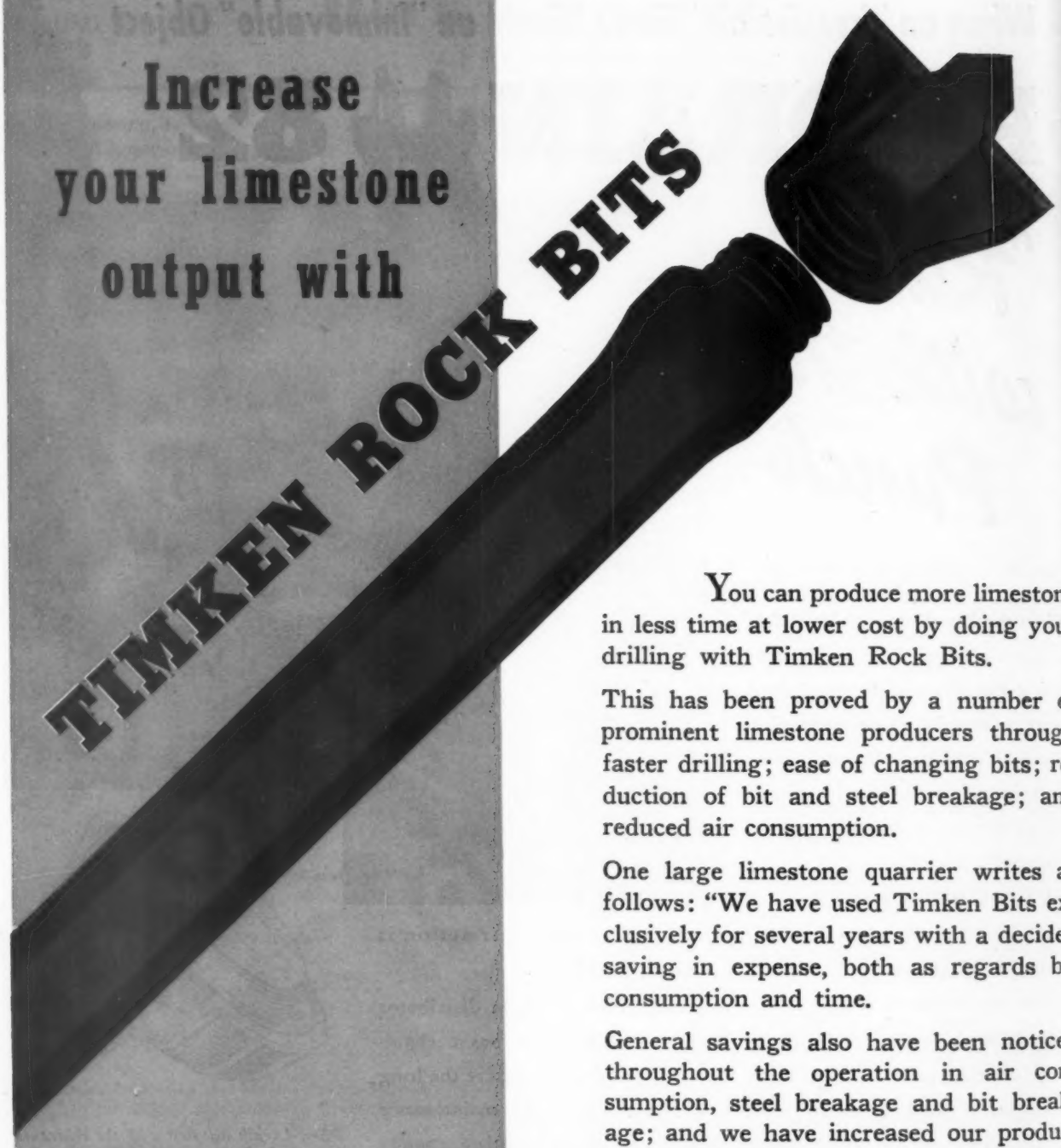
Reg. Trade Mark

thew Lorain

THE THEW SHOVEL COMPANY
LORAIN, OHIO

CRANES • SHOVELS • DRAGLINES • MOTO-CRANES

Increase your limestone output with TIMKEN ROCK BITS



You can produce more limestone in less time at lower cost by doing your drilling with Timken Rock Bits.

This has been proved by a number of prominent limestone producers through faster drilling; ease of changing bits; reduction of bit and steel breakage; and reduced air consumption.

One large limestone quarrier writes as follows: "We have used Timken Bits exclusively for several years with a decided saving in expense, both as regards bit consumption and time.

General savings also have been noticed throughout the operation in air consumption, steel breakage and bit breakage; and we have increased our production considerably."

If you are not using Timken Bits you are definitely passing up an important source of increased profit. Arrange now for a test under your own operating conditions. Write for name of nearest Authorized Distributor.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

ROCK BITS

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO

NORTHWEST

IN THE PIT

Northwest versatility makes it ideal equipment for the mine. Northwest Shovels bring to pit operations a combination of design and operating advantages that make them real Rock Shovels. The Northwest Dual Independent Crowd utilizes force other shovels waste. Massive booms and sticks of welded construction back up the digging force of the Northwest Crowd (and no Northwest welded shovel boom has ever failed). The Cushion Clutch lengthens cable life and reduces strain on all parts under power. Northwests are built for the tough job of mining.

AROUND THE PLANT

Convert it to a crane—it's a quick easy job—just change the boom. Here you have a machine that can work from the ground or a car, travel from car to car and unload a whole train, handle scrap, work on the tailings pile, handle construction or repairs, do a million and one odd jobs.

Route it from job to job, ashes or coal at the power plant, unloading machinery, erecting machinery, road repair about the mill—it's all in the day's work. Northwest crawlers take it anywhere.

STRIPPING OVERBURDEN

Northwests are often used as two operation machines—stripping overburden and then handling ore.

Their easy maneuverability takes them over rough going and they can be equipped to provide the long reach that will put the spoil well out of the way. Where cars have to be loaded the "feather touch" control provides easy operation that permits accurate spotting of the bucket and at the same time materially reduces the effort required to keep the output curve up all day long.

There is a Northwest of a type and size for every job—all with exclusive Northwest features that increase output and reduce upkeep. Let us send you details on the size you need.

NORTHWEST ENGINEERING CO.

1806 Steger Building, 28 E. Jackson Boulevard, Chicago 4, Illinois

In Gardening It's

A GREEN THUMB

You've heard of the chap with a "green thumb." Everything he plants flourishes. Of course, what he really has is an unusual combination of knowledge, experience, and great enthusiasm for what he's doing.

Call it "green thumb" . . . call it knowledge . . . call it "feeling" for the job . . . it's a quality that every Stephens-Adamson engineer brings to Material Handling problems.

It comes to him from long association with a group of progressive conveyor engineers . . . with a company that for 45 years has led the field with new units and new methods.

This "feeling" for the job is supplemented by a complete line of conveyors and accessories from which S-A engineers can make unrestricted choice—the right equipment . . . to convey the right volume . . . to the right place . . . at the lowest cost per ton over the long term.

If you want the man with the "green thumb" in the bulk material handling field, talk to an S-A engineer.

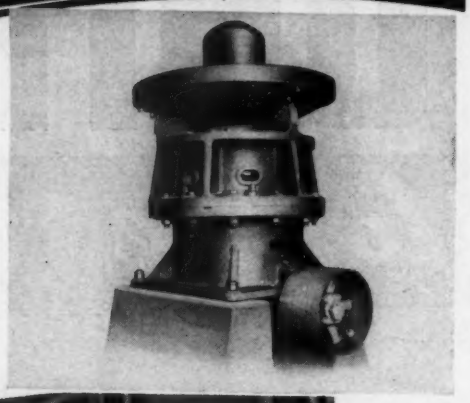
STEPHENS-ADAMSON MFG. CO.

7 RIDGEWAY AVENUE, AURORA, ILLINOIS — LOS ANGELES, CALIF. • BELLEVILLE, ONT.

Designers and Manufacturers of All Types of

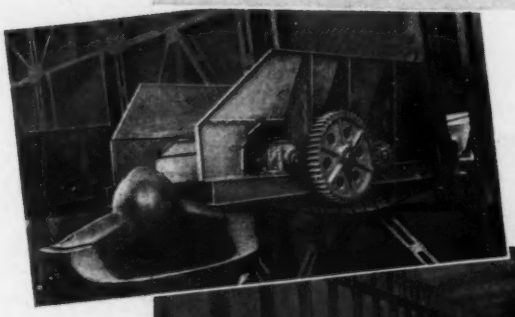
BULK MATERIAL HANDLING EQUIPMENT

LIME INDUSTRY EQUIPMENT by TRAYLOR



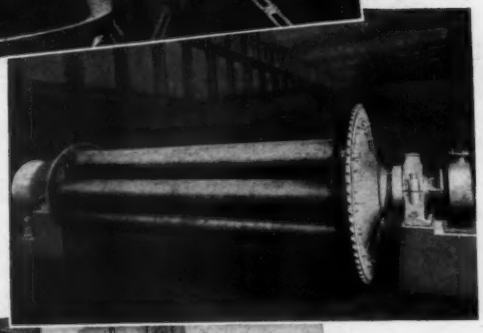
CRUSHERS

Traylor primary and secondary crushers—jaw, gyratory or roll—comprise the most extensive line on the market, from which any operator can select a complete plant for the manufacture of lime and agricultural limestone.



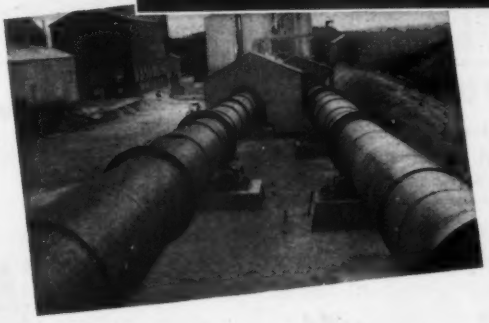
FEEDERS

Keep a steady flow of material going to the crushers, kilns, coolers, etc., with a feeder. There is a Traylor to fit your needs. These machines will help any operator get maximum production at all times.



COOLERS and DRYERS

Producing steadily and efficiently in many lime plants throughout the country are Traylor Multitube Coolers and Dryers, into which are built many exclusive patented features which make them outstanding in their field.



ROTARY KILNS

Special features place the Traylor Rotary Kilns in a class by themselves. Some of these features are—all welded steel shells; single roller supports; a new type combustion control for increased fuel economy. Made in sizes to best fit the operator's needs, Traylor Kilns are producing efficiently in many lime plants.

WE ALSO BUILD

Hot Lime Conveyors
Stone Scrubbers
Tube, Ball-Tube and Pebble Grinding Mills

WRITE FOR BULLETINS

TRAYLOR

ENGINEERING & MANUFACTURING CO.

MAIN OFFICE AND WORKS — ALLENTOWN, PENNA., U.S.A.

NEW YORK CITY
3416 Empire State Bldg.

CHICAGO
2051 One La Salle St. Bldg.

LOS ANGELES
919 Chester Williams Bldg.

EXPORT DEPARTMENT
104 Pearl St., New York City

CANADIAN MFRS.—CANADIAN-VICKERS, LTD.
P.O. Box 550 Place D'Armes Station, Montreal, Canada

UNIT 1020

for the TOUGH *jobs*

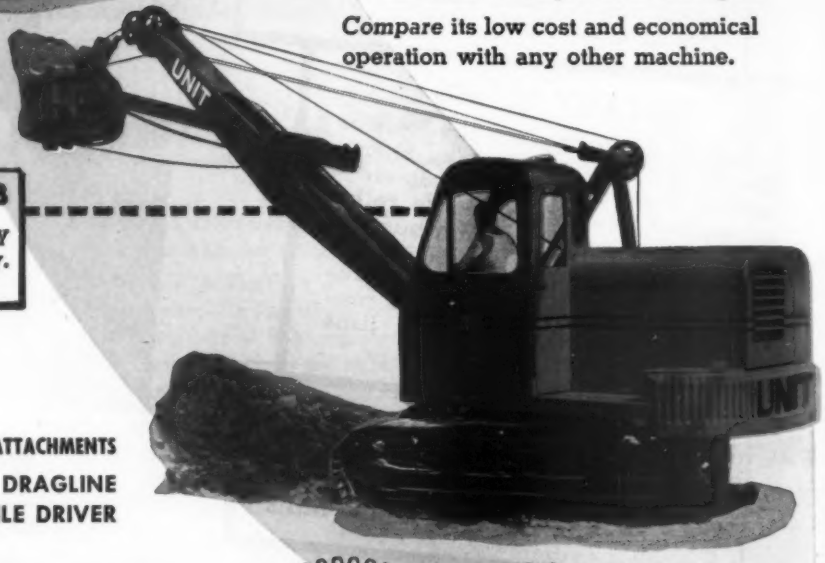
10 TON CRANE

Consider these exclusive features *not* found in any other comparable crane or shovel:

- New style full vision cab.
- Gasoline engine mounted in straight line with main machinery.
- Drop-forged alloy steel gears and splined shafts.
- Automatic traction brakes . . . no manual control required.
- One-piece cast gear case, simple in design and built as carefully as the finest automotive transmission . . . dust proof and oil tight.

Compare its low cost and economical operation with any other machine.

FULL VISION CAB
Complete 360 degree visibility at all times. Promotes safety. Increases job efficiency.



Convertible **TO ALL ATTACHMENTS**
• SHOVEL • CLAMSHELL • DRAGLINE
• TRENCHOE • MAGNET • PILE DRIVER

3/4 YARD SHOVEL

CONTACT FACTORY DIRECT
FOR PRICE AND DELIVERY

UNIT CRANE & SHOVEL CORP. — **MILWAUKEE 14, WISCONSIN, U.S.A.**

A4848-1PC-R2

TOUGHEST AIR HOSE *ever built!*

Now out of the skies comes a new "super" air hose for industry, embodying the revolutionary construction principles pioneered by the G.T.M. — Goodyear Technical Man — in building bullet-puncture-sealing rubber fuel lines for military airplanes. It is the new Goodyear Emerald Cord Hose, fortified with an exclusive interlocked construction that gives far greater adhesion-strength between cover, carcass and tube.

This makes possible a much lighter hose with thinner wall gauge, but with far more ruggedness, flexibility and longer life than any previous air carrier of equal inside diameters. Superbly resistant to oil, gas, heat, cold, weather and abuse. Yet moderately priced because its extra quality comes from superior engineering, not excess beef. Made in light-, medium- and heavy-duty types.

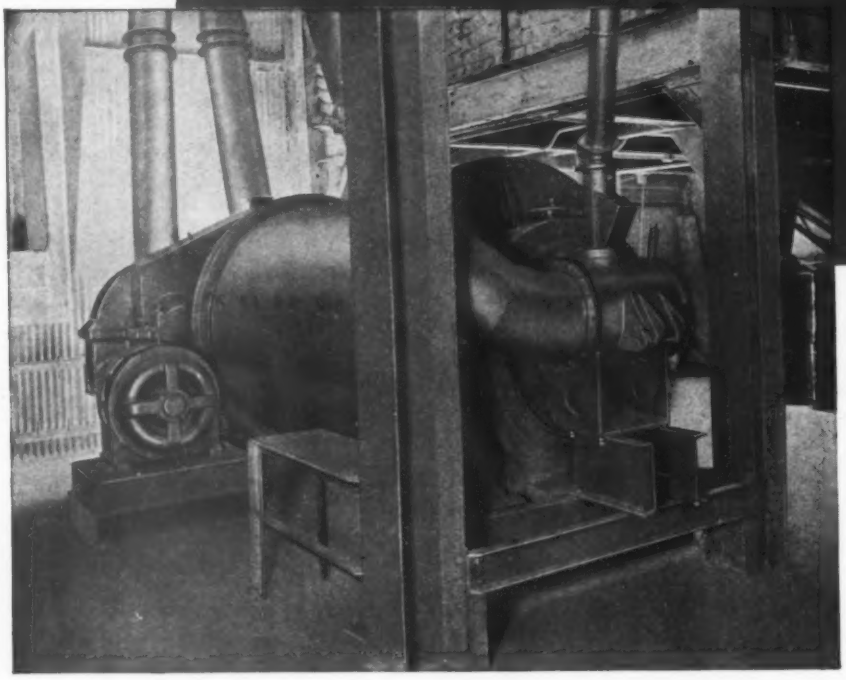
NOW AVAILABLE from your Goodyear Industrial Rubber Products Distributor — your headquarters for Belting, Hose, Molded Goods and Packing, built to the world's highest quality standard.

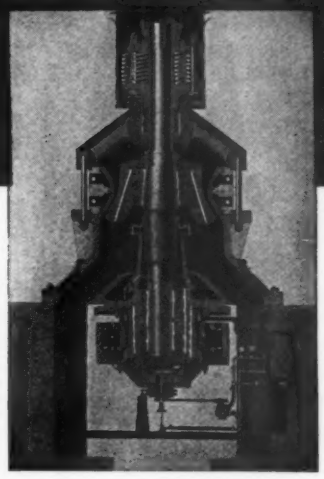
Emerald Cord—T.M. The Goodyear Tire & Rubber Company

GOODYEAR

THE GREATEST NAME IN RUBBER

Machinery for





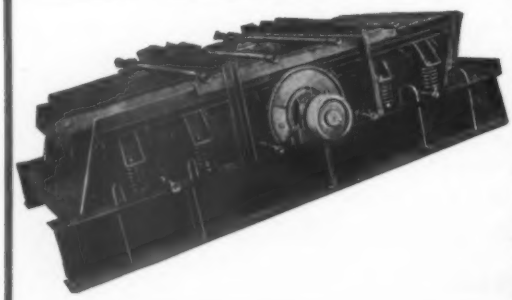
THIS 5½'x8' KENNEDY AIR SWEPT TUBE MILL PRODUCES 7 TONS PER HOUR—With a feed of 4x¾ in. limestone and dust

Use the Kennedy Air Swept Tube Mill to get superfine grinding at bottom costs. The product ground in this tube mill and collected in three cyclones is (1) 5 tons per hr of 80% thru 200 mesh, (2) 1 ton per hr of 92% thru 200 mesh, and (3) 400 lbs. per hr of 99.8% thru 325 mesh. Simple adjustment permits a desired variation from this combination of fine mesh sizes. The mill is driven through the remarkable Kennedy Integral Gear Drive for Tube Mills. This enables the motor to be direct-connected to the high speed shaft. The gears cannot be misaligned or set wrong. Power required to drive the mill is thus greatly reduced.

KENNEDY BALL BEARING GEARLESS CRUSHER . . .

With a Synchronous Motor built in its pulley, this machine shows 80% saving in the cost of maintenance and a saving of 50% in power over geared crushers. It has produced 156 tons per hour when set to 7/16" between the head and concaves at the bottom. The motor runs on ball bearings and is continuously lubricated by a force feed lubrication system. The motor is built especially for this crusher.

KENNEDY VIBRATING SCREENS . . .



give positive action on the screen cloth without transmitting vibration to supporting members. They are made in a wide variety of sizes with single or double decks and to meet any screening requirements. The type of vibration used permits lower speeds for large pieces and higher speeds for small pieces. Material is continually turned over when passing along the screen surfaces. In this way, exceptionally high efficiency is obtained at all times.

Burn the Smaller Sizes Too

Kennedy Vertical Continuous Discharge Kiln

By calcining stone ranging ¾" to 1¼", this kiln utilizes what would ordinarily be waste for the old type vertical kiln. Fuel is thermostatically controlled, making the kiln practically automatic. It discharges continuously, eliminating overburned or underburned lime.

If your lime market is too small to warrant a Preheater and Rotary Kiln installation you can produce a better grade of lime five to ten tons daily with the Kennedy Vertical Continuous Discharge Kiln. It has a lower power requirement, high thermal efficiency, and produces a quality product.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

AGRICULTURAL LIMESTONE and LIME MANUFACTURE...

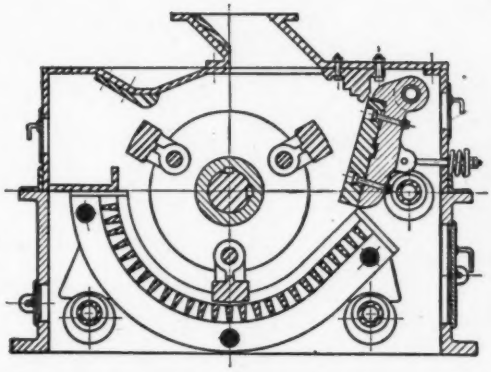
Kennedy Machinery can put your plant up among the leaders. It has been developed by more than 50 years in designing, manufacturing, and installing practically every type of machinery used in Rock Products plants. How the Kennedy line provides the latest in scientific lime and agricultural limestone production is shown in the Kennedy advancements described here. With Kennedy machinery you can have greatest confidence that your plant will maintain its high initial efficiency for years to come.

KVS

Machinery and equipment for the complete lime or agricultural limestone plant incorporates the most efficient principles applied to each type of machine plus exclusive Kennedy refinements.

The Best Hammermill Features

are built into Kennedy Roll Hammer Crushers. The Type "E" machine which is diagrammed at the right is equipped with from three to eight hammers, depending on the material to be pulverized. This machine is easy to adjust while in operation, by cam arrangements. The weight of the hammers depends largely upon the diameter of the machine and the material handled. Shafts are carried in ball bearings. Type "E" pulverizes from 75 to 500 tons per hour depending upon the size machine.



THE LATEST IN SCIENTIFIC LIME PRODUCTION - *KENNEDY STONE PREHEATER - ROTARY KILN DEHEATER AND SOAKING PIT*

20% Increase in Capacity—40% Savings in Fuel

It is now possible to combine the superior product of a rotary kiln with the operating economy of a vertical kiln with the Kennedy Stone Preheater and Deheater. By partial calcining the material this system reduces kiln wear and kiln lengths. It recovers and utilizes exit gases, and has proved so efficient in actual operation that 40% fuel savings and increased output exceeding 20% have been obtained.

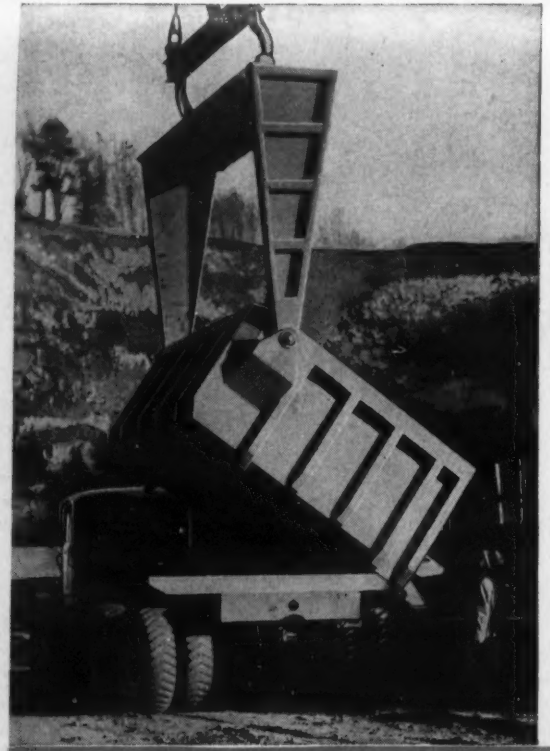
Short kilns employing the Kennedy method also acquire an internal glaze which lessens the wear on kiln liners, lowers the power requirements, and reduces formation of kiln rings. Overburned and underburned lime is practically eliminated. Coal feed and lime calcination are switchboard controlled.

KILNS
COOLERS
DRYERS
CRUSHERS
HAMMERMILLS
SCREENS
FEEDERS
CONVEYORS
ELEVATORS
GRINDING MILLS
CLASSIFIERS
WASHERS
DUST COLLECTORS
AIR SEPARATORS

Write Today

for our catalog and description on these and other types of KENNEDY machinery.

2 PARK AVENUE • NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.



Something NEW in Quarry Haulage

A new understanding of the need for *special purpose* haulage machinery to meet *your* highly individual mine or quarry transportation requirements.

In your modern special purpose quarry haulage system the design of your *containers* must be your *first* consideration. Your containers must be engineered to minimize idle time in shovel and crusher operation. Your containers must be designed to receive, carry and discharge the *right* number of loads, of the *right* tonnage, in the *right* amount of time. Your containers must be engineered to fit your plan for future property development.

An engineered decision on the type and size of container *pre-defines* your power problem — enables the truck engineer to recommend the most efficient truck or tractor model *for your service.*

The EASTON Lift-Door Container rounds out the basic EASTON line of special purpose haulage machinery. See also the EASTON Drop-Door and Phoenix Pan-Type Containers. From these basic EASTON designs you can choose the *right* container of the *right* capacity for your service.

A simple way for you to get valuable technical advice on your individual haulage problem (without obligation) is to write for your copy of the new Easton Transportation Statement, Form 176. Call or write: Engineering Counsel, Easton Car & Construction Company, Easton, Pa.

200 TONS OF IRON ORE *per hour, per truck*

An EASTON Lift-Door Container is shown here as a load-on-back unit with a 200 h.p. Diesel-powered truck. Four of these units, making seven trips per hour on a difficult 7% grade against the load, deliver an average 8-hour haul of more than 6,000 tons of iron ore. Payloads per trip average 29-tons, loaded from 5 cu. yd. electric shovels. Dumping of the lift-door container is accomplished by means of overhead air or electric-operated hoist at the crusher.

B-1024

The Reason for this Fact is worth knowing

Your GATES VULCO ROPES are Today Making Performance Records NEVER EQUALED Before!

No V-belts built by *anyone* before the war had anywhere near the strength and durability that was found necessary on U. S. Army tanks, tractors and self-propelled big guns in combat service. Gates developed these greatly superior V-belts for Army use—and here is why this fact is important to industrial users of V-belts:—

Here is the reason

Every improvement developed by Gates for U. S. Combat Units — and many later improvements, also—have been added, day by day, to the quality of the Standard Gates Vulco Ropes which have been delivered to you.

That is why, *long before the war was over,* you were getting in your Standard Gates Vulco Ropes a product built to far higher service standards than any V-belts ever built by anyone before the war.

And that is not all of the story. Through continuing *specialized* research, the service qualities of these superior Gates Vulco Ropes have been still further improved as all of Gates facilities and energies have been returned to the service of industry.

These are the simple reasons why the standard Gates Vulco Ropes you are getting today are far and away the best V-belts Gates has ever delivered to you.

All Gates V-Belts are Built with *The Patented* CONCAVE SIDE

THE GATES RUBBER COMPANY

Engineering Offices and Jobber Stocks in All Large Industrial Centers

Gates

THE MARK OF SPECIALIZED RESEARCH

484

GATES VULCO ROPE DRIVES

CHICAGO 6, ILL., 549 West Washington. NEW YORK CITY 3, 215-219 Fourth Avenue. ATLANTA 3, GA., 521 C. & S. Nat'l Bank Bldg.
LOS ANGELES 21, CAL., 2240 E. Washington Blvd. DENVER 17, COLO., 999 S. Broadway. DETROIT 2, MICH. 223 Boulevard Bldg.
PORTLAND 9, ORE., 333 N.W. 5th Ave. DALLAS 2, TEXAS, 1710 N. Market St. SAN FRANCISCO 3, CAL., 170 Ninth St.

CUSTOM-BUILT
for a Cement Plant in Egypt

Designed to meet the operating conditions and requirements of its discriminating purchaser, this 22½ Ton Vulcan Diesel-Electric Locomotive is a typical example of the way in which our policy of "Flexible Standardization" permits Vulcan engineers to give better service than would be possible with rigidly standardized designs.

SPECIAL FEATURES, in this case, include bronze-cloth screens to keep cement-mill dust out of the generators and motors, spring-loaded couplers and buffers and six driving wheels to assure safe operation on relatively light track. STANDARD FEATURES, that have proved their value to many other great industrial organizations, include heat-treated cast-steel side frames and bumpers; over-capacity semi-elliptic cross-equalized springs, and cast-steel gear case with double oil-seals and oil-level gages.

Write us regarding any industrial locomotive requirement up to approximately 100 tons in weight; Diesel-Electric, Diesel Geared or Steam. Our experienced engineers welcome opportunities to submit proposals for custom-built locomotives that assure best possible results under any specified combination of operating conditions and requirements.

PRINCIPAL SPECIFICATIONS

PERFORMANCE

Tractive Effort, starting, lbs. (30% adhesion, with sand)	13,500
Tractive Effort, continuous, lbs. (Six miles per hour)	5,750
Maximum Safe Speed, miles per hour	20

MECHANICAL EQUIPMENT

One Six-Cylinder Full Diesel Engine (Caterpillar No. D-1300) rated 150 hp. at 1000 r. p. m.
Westinghouse Straight Air Brakes and Auxiliary Hand Brakes
One Air Compressor, 30 C. F. M., mechanically driven

ELECTRICAL EQUIPMENT

One 300-Volt D. C. Generator, Westinghouse Type 195-A
One 300-Volt D. C. Traction Motor, Westinghouse Type 1443-A
One Westinghouse Single-Station E. M. Control

DIMENSIONS

Track Gauge (700 m/m)	29½"
Wheelbase	8'-6"
Length, over bumpers	17'-6"
Width, overall	6'-0"
Height, to top of cab	9'-2"
Wheel Diameter	33"
Minimum Weight of Rail	30 lb.
Radius of Sharpest Curve	50 ft.

VULCAN IRON WORKS
Established 1849

Main Office and Works **WILKES-BARRE, PA.,** New York Office 50 Church

Steam Locomotives	Rotary Kilns, Coolers and Dryers	Toothed, Double-Roll Crushers	Heavy-Duty Electric Hoists
Diesel and Gasoline Locomotives	Rotary Retorts, Calciners, Etc.	Heavy-Duty Briquetting Machines	Self-Contained Electric Hoists
Diesel-Electric Locomotives	Improved Vertical Lime Kilns	Ball, Rod and Tube Mills	Cast-Steel Sheaves and Gears
Electric Locomotives and Larrys	Automatic Quick-Lime Hydrators	Shaking-Chute and Chain Conveyors	Open-Hearth Steel Castings

Only A-C Builds

...THE WORLD'S LARGEST LINE OF BASIC PROCESSING EQUIPMENT...

BUYING COMPLETE EQUIPMENT at one time saves trouble and expense. And as a rule it means *better* engineering—since *one* supplier is responsible for its performance. The customer gains, either through increased production or lowered costs.

A-C BUILDS EQUIPMENT *COMPLETE*

If you profit in dealing with one source, think how much more it will mean to you when you specify A-C equipment. For Allis-Chalmers is the *only* company that builds basic processing machinery, as well as motors and drives! This fact is also reflected in our engineering. The A-C men you deal with are *complete-line* engineers — familiar with every step in the basic processes. They are qualified to figure both your mechanical and electrical needs . . . and correlate the two into a smooth-running, productive team.

REPUTATION FOR *QUALITY* MACHINERY

Even when you purchase individual A-C equipment, like motors and drives, for existing machinery you are assured of as *good* . . . and in many cases *better quality* equipment than you can find anywhere on the market. Next time you're pressed with equipment problems, why not find out how A-C can help you. Call our nearby district office, or write direct to ALLIS-CHALMERS, MILWAUKEE 1, WIS.

A 2005

HEAR THE BOSTON SYMPHONY
Every Saturday Evening, American Broadcasting Co.

SCREENS Modern engineering—giving you more screen for less money — typifies the 8 different types of vibrating screens which A-C builds. "Stress-relieving", scientifically designed support frames, many other features contribute to longer screen life, low maintenance.

Send for These FREE HELPS!

Complete Line of A-C equipment for Process Industries. Bulletin B6166D.

"Low-Head" Screens —3 x 6 to 6 x 16 ft —in 1, 2 or 3 decks. Bulletin B6330.

"Ripl-Flo" Screens— 3 x 6 to 6 x 16 ft— in 1, 2 or 3 decks. Bulletin B6151B.

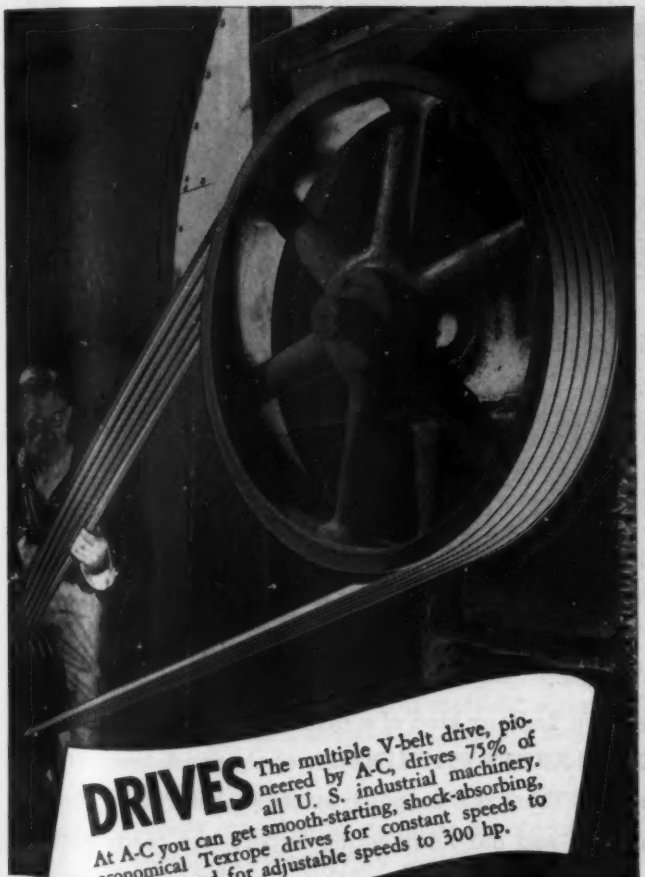
Electric Motors — engineering data, prices, sizes, etc. Bulletin B6052F.

Texrope Drives — prices, sizes of belts, sheaves, etc. Bulletin B6051F.

All Three!

...THE WORLD'S WIDEST LINE OF V-BELT DRIVE EQUIPMENT...

...AND A COMPLETE LINE OF MOTORS WITH WHICH TO DRIVE THEM!



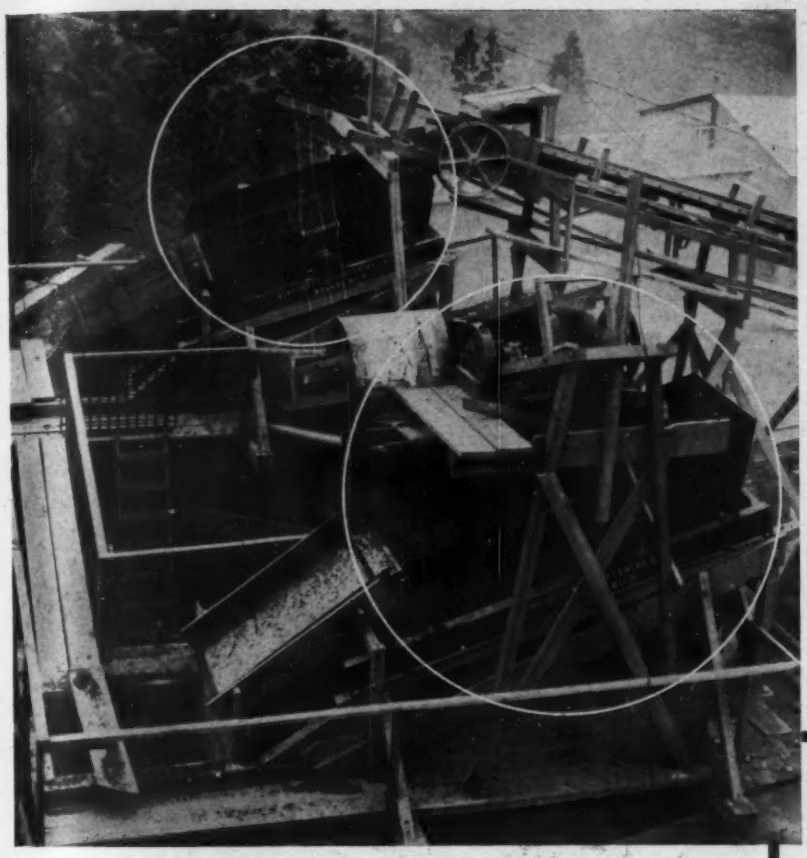
DRIVES The multiple V-belt drive, pioneered by A-C, drives 75% of all U. S. industrial machinery. At A-C you can get smooth-starting, shock-absorbing, economical Texrope drives for constant speeds to 6000 hp; and for adjustable speeds to 300 hp.

MOTORS Allis-Chalmers' complete line of motors in all ratings to 10,000 hp have a reputation for sturdiness and ability to handle overloads. That's because they're generously proportioned, have high factor of safety built-in.

ALLIS A-C CHALMERS

The Only Company that Builds Processing Equipment Complete with Motors and Drives!

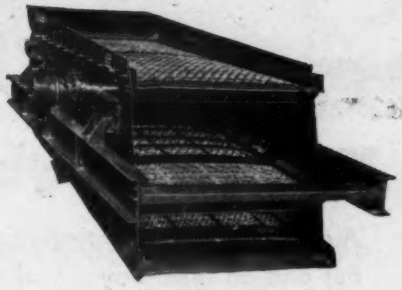
CONCENTRATED SCREENING FORCE



IN SIMPLICITY GYRATING SCREENS

●

In Simplicity Gyrating Screens all force is concentrated directly across the screen surfaces. The counterbalance is machined directly on the shaft, and it exactly balances the weight of the entire vibrating screen deck assembly. In this way it "builds up" positive action across the screen surfaces with perfect smoothness. This is one of the many Simplicity reasons for improved screening.



A 5' x 12' Model D Triple Deck Simplicity Gyrating Screen

GYRATING SCREENS GRADE LARGER TONNAGES IN MORE ACCURATE SIZES

Consider your separation in terms of screen capacity, screen life and the grade of material separated and you will always find Simplicity Gyrating Screens on top in the long run.

Your own screening problem may fit into one of the hundreds solved with complete satisfaction by the army of Simplicity users. And if it is something of an extra special nature, the broad experience of Simplicity Engineers can be relied upon to produce an answer that will give you both quality and economy in operation.

Simplicity

TRADE MARK REGISTERED

ENGINEERING COMPANY

DURAND, MICHIGAN

For Your Primary Scalping Operations

GREATER TONNAGE...

CLEANER FEED...

- BIG CAPACITY
- HANDLES UP TO 1¼ YARD SHOVEL SIZE FEED
- CLEAN DISCHARGE
- NON-CLOGGING ACTION
- POSITIVE VIBRATION NOT DAMPENED BY HEAVY LOADS
- LONG LIFE OF MANGANESE BARS
- BUILT FOR SEVERE USAGE

BE assured of a clean, properly sized feed to your crushers by installing a Symons Vibrating Bar Grizzly on your scalping jobs. This grizzly is applicable where clear openings of 2½ inches and larger are permissable. Its powerful vibrating action makes it especially effective for wet, sticky materials. Rapid removal of fines and the separation of small adhesive particles combine in giving to this grizzly an enormous tonnage of clean feed, thus permitting your crushers to operate at maximum capacity. For further particulars, write for Bulletin 121.

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN

NEW YORK • LOS ANGELES • WASHINGTON • LONDON • TORONTO • JOHANNESBURG

NORDBERG MACHINERY

SYMONS *Vibrating Bar* GRIZZLY

Below Right: Sample of agstone from new Cedarapids hammermill. Below Left: Sample of agstone produced by other hammermill in the same quarry.

. . . greater efficiency in producing finer sizes of Agricultural Limestone

Twenty to sixty tons per hour of 90% plus thru No. 8 sieve with high concentration in the smaller sizes specified for most agstone—that's the kind of production you get from the new Cedarapids hammermill. This is the result of new methods of hammermill construction designed and developed by Cedarapids engineers.

Look how the material is fed, struck against the correctly angled breaker plate from which it rebounds into the free-swinging hammers assuring a higher percentage brought down to specified sizes per unit of power.

Compare the finished products from the Cedarapids hammermill with that of other hammermills. Samples shown were taken from actual competitive tests by large mid-western producer. Note the high concentration of finer sizes in the Cedarapids hammermill agstone. Tonnage of the Cedarapids hammermill more than matched that of larger old line hammermills.

Every feature is built to the highest Cedarapids standards for long life, trouble-free operation, low cost and better products. Offered in three sizes to fit your demands. Get the details today.

Iowa Manufacturing Company, Cedar Rapids, Iowa

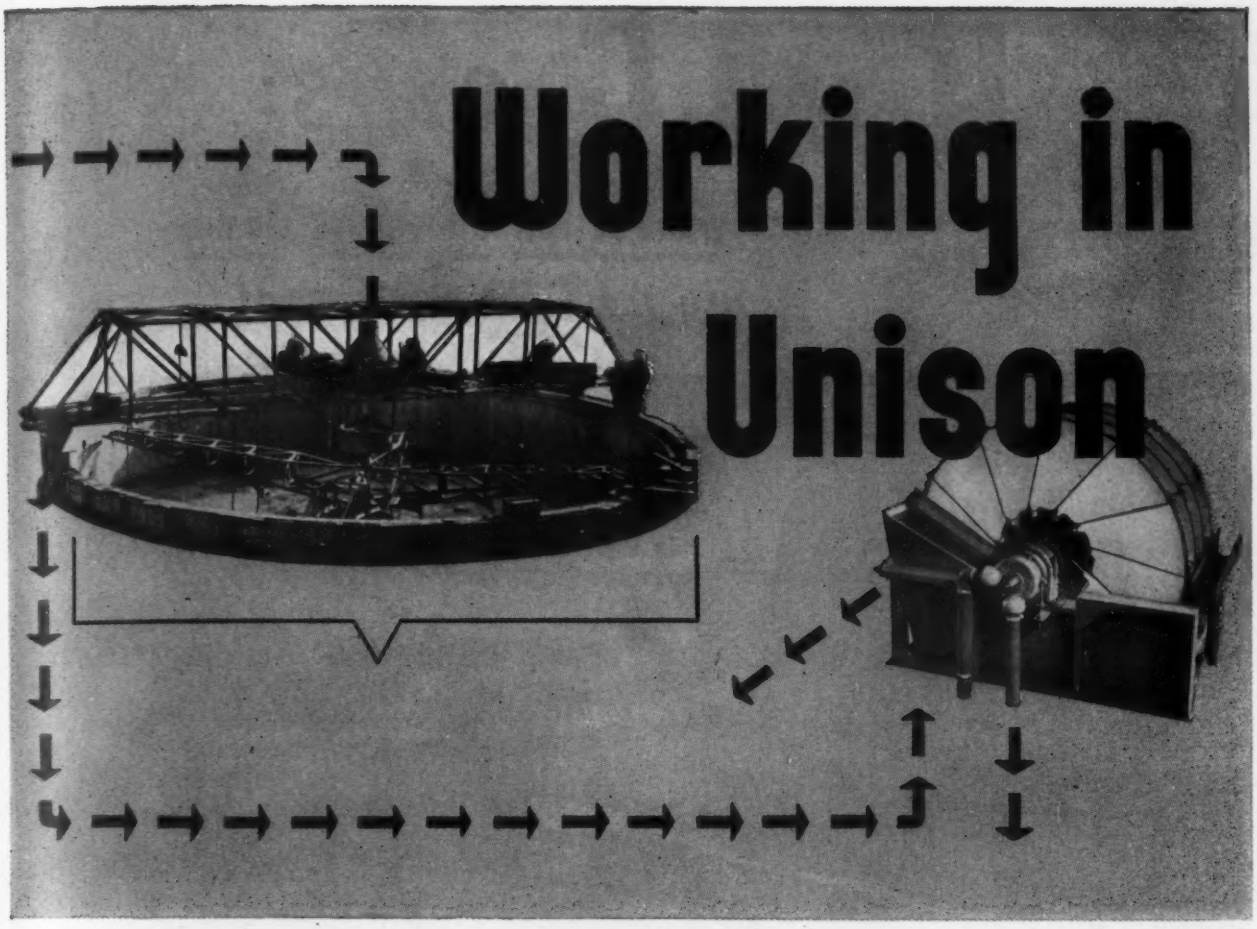
THE IOWA LINE *of Material Handling Equipment Includes:*

ROCK AND GRAVEL CRUSHERS
BELT CONVEYORS—STEEL BINS
BUCKET ELEVATORS
VIBRATOR AND REVOLVING SCREENS

STRAIGHT LINE ROCK AND GRAVEL PLANTS
FEEDERS—TRAPS
PORTABLE POWER CONVEYORS
KUBIT IMPACT BREAKERS

TRAVELING (ROAD MIX) PLANTS
DRAG SCRAPER TANKS
WASHING PLANTS
TRACTOR-CRUSHER PLANTS
STEEL TRUCKS AND TRAILERS

PORTABLE STONE PLANTS
PORTABLE GRAVEL PLANTS
REDUCTION CRUSHERS
BATCH TYPE ASPHALT PLANTS



General American Thickeners and Conkey Filters make an efficient team for increasing production and providing dependable trouble-free performance in processes requiring these unit operations.

Each unit, the Thickener and the Filter has distinctive features of design and construction which individually contribute to its efficient operation.

When both unit operations are required in one installation and the thickener and the filter are designed to work in unison, the result is increased production with superior performance.

The fact that both units are designed, precision built and placed in initial operation by one organization, under — one contract one responsibility — assures a smoother working installation, with a minimum amount of trouble and supervision on the part of the purchaser.

Write for further information on this new concept of service to the process industries.

OTHER GENERAL AMERICAN PRODUCTS

DRYERS
DEWATERERS
TURBO-MIXERS
BINS
STORAGE TANKS
KETTLES
LADLES
STEEL STACKS

General American

TRANSPORTATION CORPORATION

process equipment • steel and alloy plate fabrication

SALES OFFICE:
515c Graybar Bldg., New York 17, N. Y.
WORKS: Sharon, Pa.; East Chicago, Ind.

GATX GENERAL AMERICAN

OFFICES: Chicago, Louisville, Cleveland, Sharon, Orlando, St. Louis, Salt Lake City, Pittsburgh, San Francisco, Washington, D. C.

War-Proved Power
for Post-War Hauling

Heavy duty GMCs are "made to order" for all kinds of heavy hauling jobs. On or off the highway, you can count on GMCs to provide peak performance and pulling power.

Patterned after the power plant used in nearly 600,000 GMC military vehicles, GMC valve-in-head engines have been battle-tested, war-proved and improved. GMC heavy duty engines are famous for such features as Turbo-Top pistons, stellite-faced exhaust valve seat inserts, full pressure lubrication, full length water jackets and 7-bearing crankshafts with steel-backed, precision-type bearings.

Ruggedness and stamina are built into every feature of GMC chassis. Heavy duty clutches . . . five-speed, syncro-mesh transmissions . . . power hydraulic or air brakes . . . dual-performance, double reduction or worm drive axles...add super strength to heavy duty GMCs.

Remember, too, every GMC, ½ to 20 tons, is truck-engineered and truck-built by the largest exclusive producer of commercial vehicles.

THE TRUCK OF VALUE **GMC TRUCKS** **GASOLINE • DIESEL**

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

CONTRACTORS

HERE ARE FACTS ABOUT FINANCING CONSTRUCTION EQUIPMENT

When you buy one or more pieces of equipment, C.I.T. WILL FURNISH THE FUNDS to complete the transaction.

Let the equipment help pay its own way while completing your contracts. Conserve your working capital for supplies, payrolls, operation purposes.

It's easy to arrange C.I.T. financing. Tell us what you want to buy . . . what it costs . . . how you wish to pay the balance . . . we'll handle all details promptly and arrange terms to suit your needs . . . AT LOW COST.

WE FINANCE

SHOVELS
CRANES—DRAGLINES
TRACTORS
BULLDOZERS
SCRAPERS—GRADERS
MIXERS—CRUSHERS
COMPRESSORS
TRUCKS
ENGINES
ELECTRICAL EQUIPMENT
Many other types of Construction Equipment

Any of these offices will be happy to serve you. Write, wire or call for full information about C.I.T. financing.

ONE PARK AVENUE
NEW YORK, N. Y.

•

660 Market Street
SAN FRANCISCO, CALIF.

The Mark of LEADERSHIP

C.I.T. CORPORATION

INDUSTRIAL FINANCING

333 N. Michigan Avenue
CHICAGO, ILL.

•

626½ So. La Brea Avenue
LOS ANGELES, CALIF.

In Canada: CANADIAN ACCEPTANCE CORPORATION *Limited, Metropolitan Building, Toronto, Canada*

AFFILIATED WITH COMMERCIAL INVESTMENT TRUST INCORPORATED

But there's nothing rare about the applications for Taylor Spiral!

THERE isn't much need for anxiety about engineers leaning too far to the light side in designing piping. Naturally, where conditions require, wall thickness is cautiously calculated and topped off with a generous factor of safety.

However, there *is* some justification for concern over the practice of using heavier pipe than needed. Too often the pipe designer breathes a sigh of relief when he comes to those low or moderate pressure jobs, quits figuring, and simply falls back on his old standby, Standard Thickness pipe!

Of course this is done on the theory that Standard Thickness represents the low point on the scale of available pipe thicknesses and is therefore a safe "out". It's safe enough, but it just happens that there is another kind of pipe, amply safe but much lighter than Standard Thickness, which can satisfy a large percentage of those everyday pipe requirements.

Yes, if you will look at the record you will find that light-but-strong Taylor Spiral Pipe can handle a big percentage of the run-of-plant services—applications like those listed below—and handle them with strength and service life to spare. Naturally this means dollars saved—dollars saved in first cost, in transportation cost, in handling cost, in erection cost, in the cost of supporting structures. In fact, the installed cost of Taylor Spiral Pipe in many cases is scarcely half that of the heavy pipe it so well replaces.

Switching to Taylor Spiral Pipe for services like those listed is made easy by the complete range of sizes and wide variety of fittings. Thicknesses range from 12 to 6 gauge; sizes from 6" to 42"; joint lengths up to 40 ft. All types of end joints and couplings, all kinds of fittings and specials or fabricated assemblies are produced by Talor Forge & Pipe Works, assuring complete service and undivided responsibility.

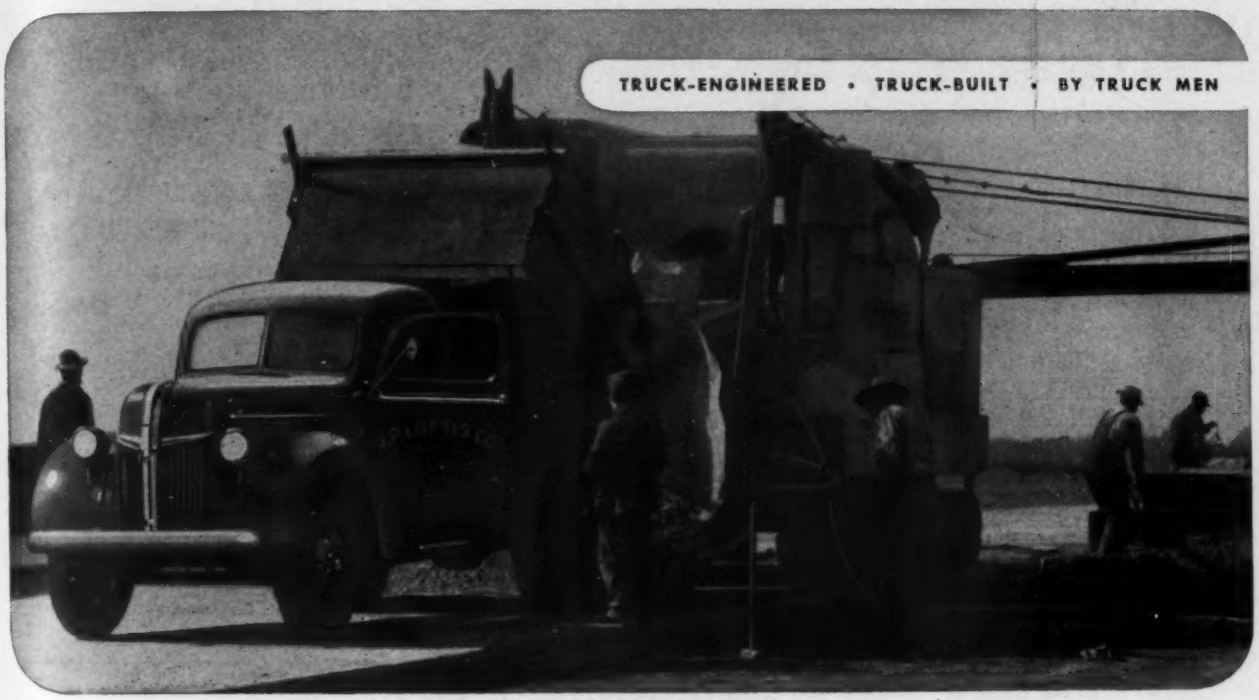
TAYLOR FORGE & PIPE WORKS

General Offices & Works: Chicago, P. O. Box 485 ★ New York Office: 50 Church St. ★ Philadelphia Office: Broad Street Station Bldg.

CHANGE TO TAYLOR SPIRAL PIPE FOR:

- High and Low Pressure Water Lines
- Low Pressure Steam and Air Lines
- Steam and Diesel Exhaust Lines
- Vacuum and Suction Lines
- Blower Piping
- Sand and Gravel Lines
- Industrial Gas Lines
- Oil and Gas Gathering Lines
- Swing Pipe
- Spray Pond Piping
- Hydraulic Mining
- Dredge Lines

Better Trucks for YOUR Business!



"Exceptional Service from Our 70 Ford Dump Trucks... Best in Their Field"

"We are particularly gratified with the exceptional service we have had from 70 Ford dump trucks . . . part of our fleet of 120 Ford units," writes V. P. Loftis of V. P. Loftis Co., Engineers and Contractors of Charlotte, N. C. *"These dump trucks have hauled from 3 to 5 cubic yards of earth and concrete aggregate under the most rugged conditions, and have held up better than any other truck in the same price field and of the same capacity, in our fleet. Ford Dealers have always been most cooperative in keeping our Fords in service."*

This is typical of the performance Ford Trucks deliver where the going is tough. Fords have always been built to handle the hard jobs better. Now there are new Ford Trucks available—the best in Ford history. Examine these new Ford Trucks at your dealer's. *Get the facts about the new Ford dump truck chassis, particularly.*

Ford

ADVANCED ENGINEERING IN NEW FORD TRUCKS

More Economy and Endurance
Easier Servicing

A STILL GREATER 100 HP V-8 ENGINE with NEW Ford steel-cored Silvaloy rod bearings, more enduring than ever in severe service • NEW aluminum alloy cam-ground 4-ring pistons for oil economy • BIGGER, more efficient oil pump and IMPROVED rear bearing oil seal • NEW longer-lived valve springs • NEW improvements in cooling • NEW efficiency in ignition • in carburetion • in lubrication • in ease and economy of servicing operations • And available in all truck chassis except C.O.E. units—the rugged, thrifty 90 HP FORD SIX-CYLINDER ENGINE, with many important advancements.

FORD CHASSIS ADVANTAGES: Easy accessibility for low-cost maintenance • Universal service facilities • Tough, forged front axles • Extra-sturdy rear axles with pinion straddle-mounted on 3 large roller bearings, ¾-floating type in light duty units, full-floating in all others • 3 axle ratios available (2 in 1-ton unit) • 2-speed axle available in heavy duty units at extra cost • Powerful hydraulic brakes, large drums, cast braking surfaces • Rugged 4-speed transmission with NEW internal reverse lock optional at extra cost on light duty units, standard on all others.

FORD TRUCKS

MORE FORD TRUCKS ON THE ROAD • ON MORE JOBS • FOR MORE GOOD REASONS

Generally Speaking

April 1, 1946

Dear Reader:

State of Louisiana has received and is compiling bids on its first major postwar highway project, a 7-mile stretch, to determine the per-mile cost. This stretch will be the forerunner to a 31 million dollar program, to be financed with bonds already sold plus matching federal grants, provided bids are acceptably low.

* * * * * * * * * * *

Federal construction which would compete with veterans' housing for men and materials will be deferred, according to the Inter-Departmental Committee on Construction. Increased construction of community facilities such as streets, sewers, waterworks will be permissible, however, and highway projects, reclamation projects, flood control projects, etc., are construction projects looked upon with favor for their job-creating value and because they offer little competition with housing. It all amounts to renewal of wartime controls for commercial, industrial and other types of construction.

* * * * * * * * * * *

Interest continues in the production of defluornated phosphate rock by calcination and by fusing at high temperatures in the presence of water vapor. Coronet Phosphate Co., in Florida, and the T. V. A. have built defluornating plants to produce fertilizer and stock feeds.

* * * * * * * * * * *

A membrane concrete-curing compound, produced by the Cem-Cure Corp., has been designed to give concrete high compressive strength, wear resistance, freedom from checks and cracks and more resistance to freezing and thawing. It is claimed that, if applied in one coat, the effect is the equivalent of a 14-day water cure.

* * * * * * * * * * *

Slate producers of eastern Pennsylvania are undertaking research, after almost 20 years of decline, in an attempt at re-establishment. The industry now employs only 10 percent as many men as it did 20 years ago. High transportation costs of a heavy product requiring special protection for shipping caused users to turn to substitutes, contributing to the downgrade of the industry.

* * * * * * * * * * *

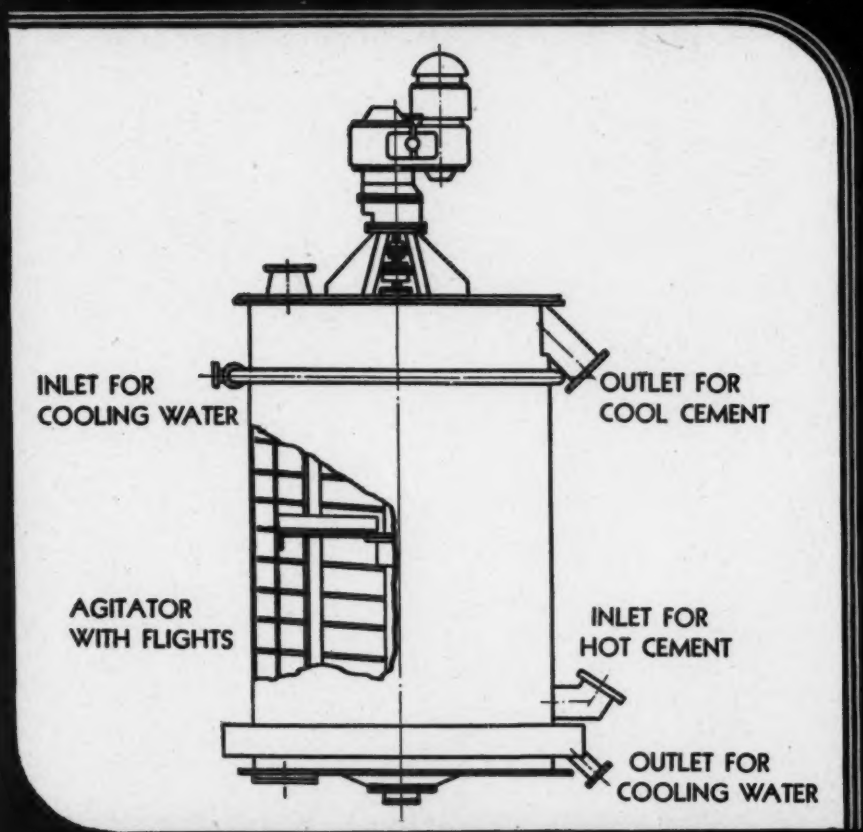
All wage and salary increases that will lead to price increases require approval from the National Wage Stabilization Board. The WSB must approve all applications for wage increases that follow a "general pattern" established in an industry or a local area since August 18, 1945. If made without prior approval, an employer forfeits his right to apply for a price increase to cover the added wage costs.

* * * * * * * * * * *

An employer, in restoring a veteran to his former position, cannot always be required to give him the same wage increases received by his successor. In a ruling to that effect, a veteran was not entitled to higher wages paid his successor because of individual ability and skill.

(Continued on page 35)

FOR COOLING HOT CEMENT



Cement manufacturers are frequently confronted with the problem of cooling hot cement to temperatures acceptable when making bulk shipments or for immediate packing in paper bags. The FLS Cement Cooler was especially developed for cooling hot cement. • The FLS Cooler consists of a tank, water-cooled externally, the cement being introduced into the bottom and conveyed in a thin layer along the inside of the water-cooled wall to the top, where it is discharged. Thus an intimate contact is established between the cement and the water-cooled surface, assuring high-cooling efficiency. • In addition to cement, the Cooler is applicable to many other similar dry pulverized materials.

F. L. SMIDTH & CO.

Designers of Cement Making Factories, Manufacturers of Machinery for Making Cement and Lime, etc.

11 WEST 42nd STREET NEW YORK, N. Y.

Thermoid —Key to Progress in Many American Industries

The old method of getting bricks to the bricklayers has been superseded by the modern Thermoid Conveyor Belt

Here's the modern method. This Thermoid Belt was chosen because neither weather nor the sharp bricks will injure the belt.

SINCE 1880, Thermoid has contributed to the progress of American Industry. In many fields of business Thermoid Products play an indispensable part. For instance, the George Haiss Manufacturing Company, manufacturers of portable conveying equipment, chose Thermoid Conveyor Belting for the portable brick conveyor shown above.

The Thermoid Line* is the result of 65 years of research and experience that not only has kept pace with the demands of industry, but in many cases anticipated industry's needs.

The Thermoid Line* of belting and hose for materials handling and power transmission may contain the key to another step forward in the improvement of your process and the reduction of your costs.—"It's Good Business to Do Business With Thermoid."

***THE THERMOID LINE INCLUDES: Transmission Belting • F.H.P. and Multiple V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products • Molded Hard Rubber and Plastic Products.**

Thermoid Rubber

DIVISION OF THERMOID COMPANY
TRENTON 6, NEW JERSEY

Contributor to Industrial Advancement Since 1880

GENERALLY SPEAKING

(Continued from page 32)

According to a ruling, an employer runs a risk of being declared in violation of the Wagner Act if he makes even a small contribution to a union of his employes.

* * * * * * * * * * *

A collective-bargaining election may not be set aside because a majority of the voters failed to cast ballots.

* * * * * * * * * * *

A tour of the Upper Cumberland River Valley has been conducted for the purpose of working out a comprehensive flood control and protection program.

* * * * * * * * * * *

The "come and get it" clause, for the purpose of encouraging broad wage increases up to 18 percent over August, 1945, standards, will permit an employer to increase wages without approval and still entitle him to use the increase for seeking later price relief.

* * * * * * * * * * *

Of interest to those contemplating setting up new businesses is a ruling that supplies costing more than $35,000 for the purpose of starting a new enterprise cannot be secured without special authorization from the Civilian Production Administration.

* * * * * * * * * * *

According to an analysis of construction costs based upon normal years and, considering the times, road-building authorities say states would be entirely justified to award contracts even when they are up to 30 or 40 percent over 1941 prices or if they are not more than 10 to 15 percent greater than the composite mile index obtained in the 1925-1929 period.

* * * * * * * * * * *

An employe who leaves to re-enlist in the armed forces probably would be entitled to reinstatement even if the employer already had re-employed him after his discharge, according to unofficial opinion of Selective Service. He probably would lose his re-employment rights if, in enlisting more than 90 days after his discharge, he had not yet applied for reinstatement during that period.

* * * * * * * * * * *

Prices of building materials in general today are not out of line with those of other goods, according to a recent study by the Bureau of Labor Statistics. Since August, 1939, wholesale prices of building materials as a group advanced about 32 percent, mainly due to high prices of lumber.

* * * * * * * * * * *

THE EDITORS

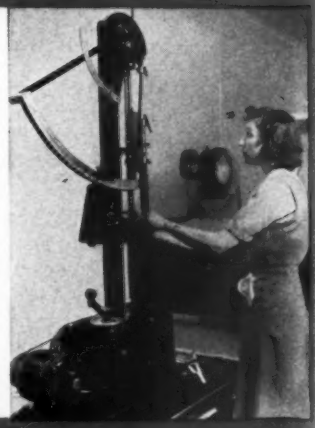
Here are 5 reasons why

...MANY MANUFACTURERS SPECIFY BEMIS MULTIWALL PAPER SHIPPING SACKS

1

CONTROLLED QUALITY

Materials for Bemis Multiwall Paper Shipping Sacks are carefully selected and laboratory tested before they are O.K.'d for use on our production lines. Typical is the tensile strength test, illustrated at right.



2

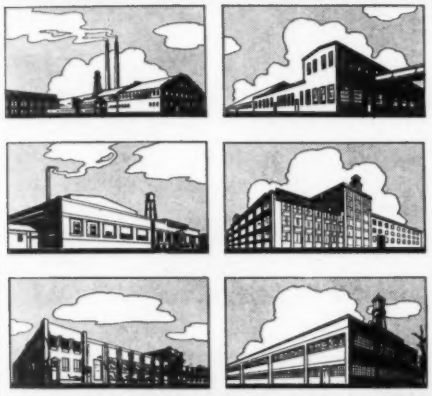
BETTER BRAND PRINTING

Our Six Multiwall plants are equipped with modern printing equipment. Skilled engravers make the plates that reproduce your brand, and our own laboratories develop and test the brilliant colorful inks that are used.

REAL PACKAGING SERVICE

Bemis Multiwall Specialists are always at your service—ready to help you solve tough packaging problems, study your present methods of filling, closing and handling and recommend changes that may lower costs and speed up production.

3



SIX BEMIS MULTIWALL PLANTS

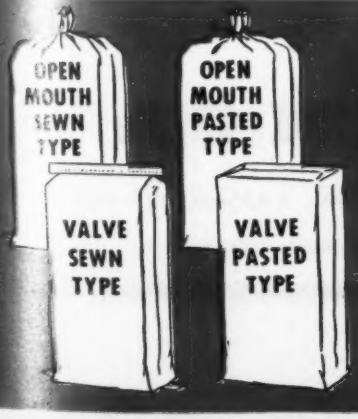
are strategically located North, South, East, and West to provide easy accessibility, quick delivery to your main plant or branches regardless of location. Bemis offices in 26 additional cities assure you of top-notch service.

4

A NATIONWIDE ORGANIZATION

There is a Bemis representative near you because Bemis offices are located in 32 principal cities. When you need Multiwalls, call Bemis. You'll find it pays to be a Bemis Multiwall customer.

5



BEMIS BRO. BAG CO.

Baltimore • Boston • Brooklyn • Buffalo
Charlotte • Chicago • Denver • Detroit
Houston • Indianapolis • Kansas City
Los Angeles • Louisville • Memphis

BEMIS BRO BAG COMPANY

Minneapolis • New Orleans • New York City • Norfolk • Oklahoma City
Omaha • Orlando • St. Louis • Salina
Salt Lake City • Seattle • Wichita

PEORIA, ILL. • E. PEPPERELL, MASS. • MOBILE, ALA. • WILMINGTON, CAL.
SAN FRANCISCO, CAL. • ST. HELENS, ORE.

Raise Your Production with

Equip your plant now to take advantage of the huge rising demands for finely ground non-metallics throughout the rock products industries.

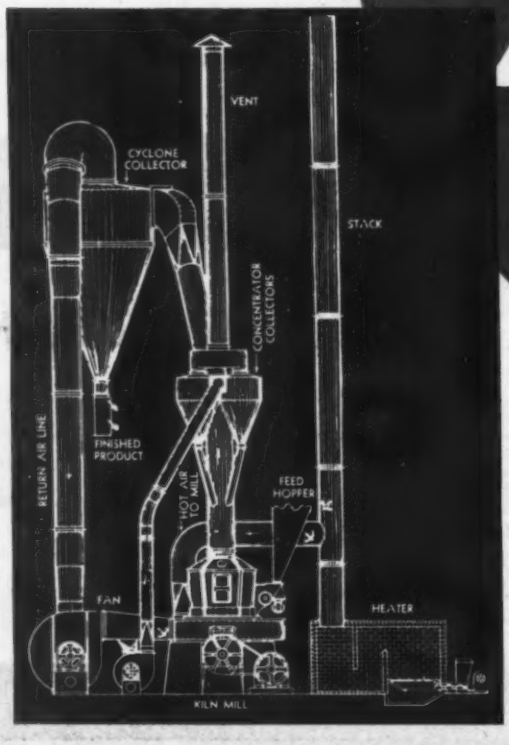
The next several years will provide big profit opportunities, if you have modern type machines that are versatile enough to handle many differe materials, and economical enough to insure sistent low costs in operation and maintenance.

The Raymond line of Roller Mills will enable you to meet all requirements. There is a Raymond mill for every purpose . . . in a wid range of capacities with comple fineness control and the latest erating features to give effic production.

RAYMOND

LOW SIDE ROLLER MILL

For medium fine grinding, up to 100-mesh materials, this machine produces extra high tonnages per horse-power. Specially adapted for pulverizing agricultural limestone, phosphate rock, gypsum, clay and similar non-metallic minerals.



DRYING AND PULVERIZING

By introducing heated air into the Roller Mill system, materials carrying surface moisture can be dried in one operation eliminating separate dryers. Diagram at right shows the Low Side Roller Mill arranged with heater and piping for handling such products.

RAYMOND

Bulletins ON REQUEST

1307 North Branch Street, Chicago 22, Illinois

Sales Offices in Principal Cities

RAYMOND Roller Mills

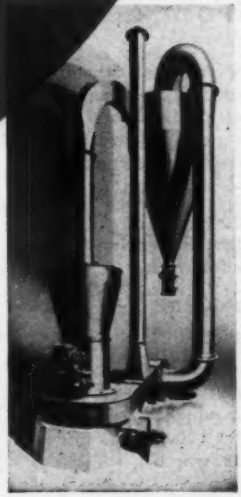
EQUIPMENT

You can depend on Raymond Roller Mills for meeting maximum specifications for agstone used in soil liming, limestone fillers used in paint and rubber manufacture, gypsum used for wallboard and plaster products, burnt lime, hydrated lime and various lime products used in building construction.

HIGH SIDE ROLLER MILL

The whizzer-equipped Roller Mill provides easy fineness control through a variable speed drive on the whizzer . . . from 60% minus 100-mesh to 99.9% minus 325-mesh or better. This is an advantage in custom grinding where different grades of material are ground on the same mill. A wide variety of high-fineness products can be handled economically with the Raymond whizzer-type Roller Mill.

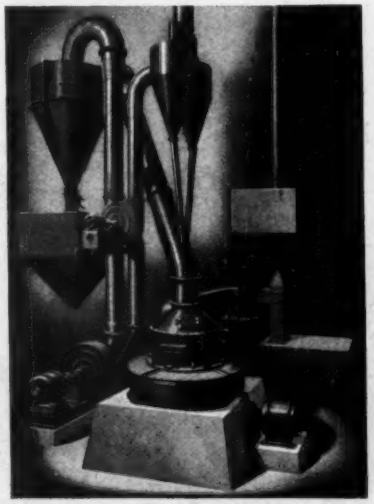
MIDGET ROLLER MILL



This provides roller-mill-economy in handling small capacities of non-metallic minerals from a few hundred pounds up to a couple of tons per hour, depending upon the kind of material and fineness.

SUPER ROLLER MILL

For large plants where each unit is required to produce from 15 to 40 tons per hour of pulverized material, Raymond Super Roller Mills are available in several sizes . . . with or without an air drying system.



PULVERIZER DIVISION

COMBUSTION ENGINEERING COMPANY, INC.

Canada: Combustion Engineering Corp., Ltd., Montreal

Only eight hours for steel plant's

80-ton G-E diesel-electric switches railroad cars and hauls charging buggies at this large steel mill.

You get these outstanding advantages from a G-E diesel-electric

Availability is 90 per cent up! A G-E diesel-electric carries sufficient fuel for several days' operation; requires only periodic inspections; runs for long periods between overhauls.

Starts on the press of a button! No time is lost in getting diesel-electric ready for work.

Switching is speeded up by diesel-electric's fast, responsive operation.

Burns about one gallon of fuel oil (5 to 8 cents' worth) to do the same work for which a steam locomotive requires 100 pounds of coal (12 to 30 cents' worth).

Maintenance is greatly simplified because diesel-electric has no boiler, firebox, nor heavy reciprocating parts.

Engine house expense is minimized because diesel-electric requires no fire cleaning, ash handling, watering nor watching.

Bridge and building maintenance is lessened, because diesel-electric's exhaust is clean.

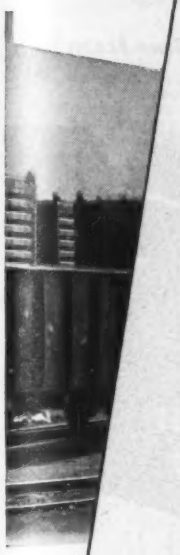
Track maintenance is reduced, because of the smooth torque and the short wheelbase of the diesel-electric.

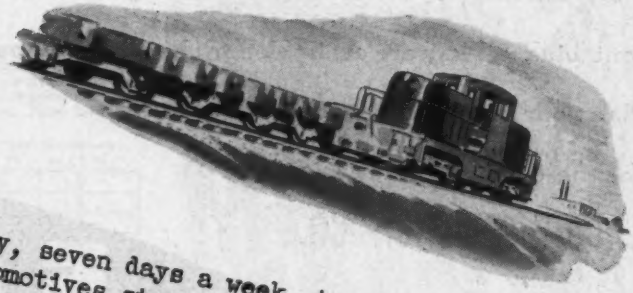
G-E diesel-electrics often return 20 to 30 per cent annually on their purchase price.

diesel-electric *Industrial* LOCOMOTIVES

A standard line — built for stock — quick delivery — low cost

a month off duty two 80-tonners





Night and day, seven days a week, two 80-ton G-E diesel-electric locomotives stay on the job at a midwestern steel mill. One hauls buggies for open hearth charging; the other does general switching.

One has been in regular service for 3 1/2 years, the other for 2 1/2 years, with only eight hours a month off duty for inspection and maintenance. Right from the start, they have paid off in high availability and more economical operation compared with the steamers they replaced.

On the 35 miles of plant trackage, these diesel-electrics frequently haul trains of 1000 tons in regular yard switching. And they will take 500-ton trains of charging buggies up a maximum grade of two per cent.

If your plant needs locomotives capable of handling heavy or light work, there is a G-E diesel-electric to meet your requirements. The standard G-E line includes 80-ton, 65-ton, 50-ton, 45-ton, and 25-ton locomotives. All G-E diesel-electrics are notable for high availability, flexible control and economy of operation.

Let G-E engineers make a survey of your motive-power requirements and recommend the size of diesel-electrics best adapted to your work.

APPARATUS DEPARTMENT
GENERAL ELECTRIC
SCHENECTADY, N. Y.

AGGREMETER is the twenty-five year old trade marked name of Erie's line of Batching Bins and Central Plants ★ From the 3 sizes of Portable Type G A plants to the largest of Semi-Portable and Permanent type Plants, Erie is prepared to meet any sand, stone, or cement storage or batching problem ★ Erie AggreMeters are built for 2, 3, 4, 5 or 6 materials in all sizes in Portable, Semi-Portable and Permanent Plants for the storage, weighing and dispensing of any bulk materials to batch trucks or truck mixers—made with 2 to 9 compartments for aggregates and cement or with separate cement bins ★ They are available for charging any batch truck or truck mixer from 1 to 7 cu. yds. ★ Plan your AggreMeter needs today.

Write today for the complete details to

ERIE STEEL CONSTRUCTION CO.

764 GEIST ROAD ★ ERIE, PA.

ERIE

AGGREMETERS

BUCKETS ★ TRAVELING CRANES

PORTABLE CONCRETE PLANTS

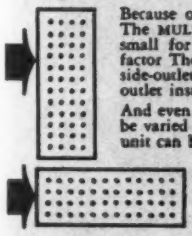
Question: WHICH DUST RECOVERY EQUIPMENT GIVES NOT ONE—BUT ALL THESE IMPORTANT ADVANTAGES?

MINIMUM PLANT SPACE

The unusual compactness of The MULTICLONE is a valuable advantage whether the installation is made in a new plant or an existing structure. The accompanying chart shows how other types of equipment compare with The MULTICLONE on space requirements, all figures based on units of comparable performance. Note how the MULTICLONE requires as little as *1/6th* the floor space, as little as *1/4th* the cubic space of other equipment. Put these figures in terms of costly plant space in *your* building and figure how vital this MULTICLONE saving is!

Make	Relative Space Requirements In Sq. Ft.	In Cu. Ft.
Multiclone	1.0	1.0
Collector A	2.1	1.8
Collector B	5.9	3.2
Collector C	6.8	3.9

MAXIMUM ADAPTABILITY



Because of its great adaptability to "shoe horn" spaces, The MULTICLONE can often be fitted into areas far too small for other equipment. Where low headroom is a factor The MULTICLONE can be installed with side-inlet side-outlet. Or for restricted side clearance, side-inlet top-outlet installations can easily be made.

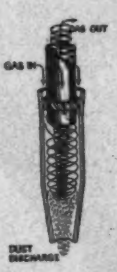
And even the shape of the MULTICLONE unit can readily be varied to fit space limitations. For example, a 48 tube unit can be 4 tubes deep and 12 wide to fit a wide, shallow space . . . or 12 deep and 4 wide to fit a long narrow space . . . or still other arrangements without affecting the operation or capacity of the unit. Gives maximum flexibility to fit cramped spaces!

HIGH RECOVERY

It is an established fact that the separating efficiency of a cyclonic tube becomes greater as the tube diameter *decreases*, due to the fact that the smaller the radius the greater the centrifugal forces that are generated. And higher centrifugal forces mean more complete separation of even the *very fine*, as well as the coarse particles.

The patented *vane* in the MULTICLONE—an exclusive feature—makes the use of small tubes practical, without complicated manifolding and permits compacting many *small*-diameter tubes into one simple, highly efficient unit.

This is one of the reasons why The MULTICLONE collects not only the coarser particles, but also an unusually high percentage of the *very fine* particles of 10 microns and less!



SIMPLE INSTALLATION

In place of the costly complicated inlet and outlet manifolding necessary with conventional cyclone systems, The MULTICLONE requires only a *single* inlet and a *single* outlet header to supply an entire bank of tubes. It's simple, easy to install, easy to insulate, easy to maintain.

In addition, in the MULTICLONE a single collecting hopper serves an entire bank of tubes—far easier to both install and service than the separate-hopper-for-each-tube arrangement of conventional cyclones!

STILL OTHER ADVANTAGES. The MULTICLONE is the result of over 38 years of concentrated research in the field of dust recovery, beginning with the first commercial application of the well-known COTTRELL Electrical Precipitator. It embodies so many important advantages—advantages that mean long life, low draft loss, minimum maintenance, and high operating efficiency—that you should get the full story of The MULTICLONE before you invest in any recovery equipment. Let one of our trained engineers make recommendations on the most economical solution to your recovery problem. A wire, letter or phone call places this assistance at your service!

Send for this free MULTICLONE booklet.

WESTERN Precipitation CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1006 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 1 LaSALLE ST. BLDG., 1 N. La SALLE ST., CHICAGO 2 • HOBART BUILDING, SAN FRANCISCO 4, CALIFORNIA
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

"Primacord helps keep red ink off our ledgers"

Knowing how to get the most from explosives, equipment, and *time* is one sure way to keep production costs down . . . show more profit.

Primacord saves time because it's easy to handle. Packed on spools . . . relatively light in weight . . . it hooks up quickly with square knots and half hitches, can be checked in a minimum of time.

Primacord gets more work out of your explosives because it detonates each cartridge in every hole, acting as a continuous blasting cap throughout the entire load.

Primacord trunk lines should be planned so that the row of holes nearest the face "goes" a split second before succeeding rows, thus relieving burden and producing better fragmentation. Only Primacord — the father of modern blasting — has this built-in uniform time delay quality.

Primacord allows variations in the load to meet conditions of rock strata, and an unlimited number of holes can be shot at one time. Yet no matter how many holes are loaded, stray currents are never a hazard when loading with Primacord — *the cap goes on last.*

No question about it. With every shot — no matter how small or large — Primacord-Bickford Detonating Fuse, used correctly, increases blasting efficiency . . . *decreases cost.*

Stray Currents are never a hazard when loading with Primacord.

Also
ENSIGN-BICKFORD SAFETY FUSE
Since 1836

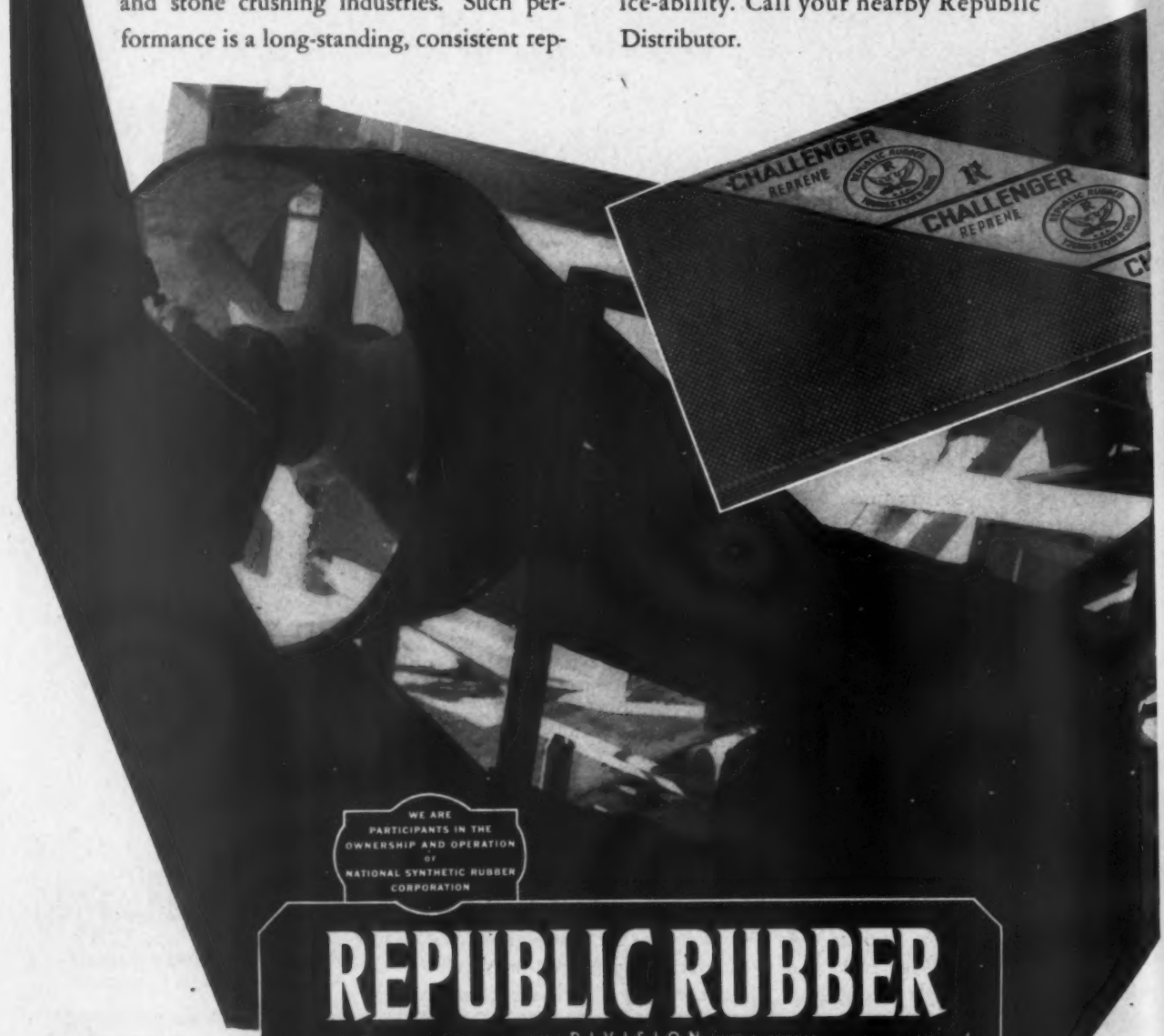
P-17

THE ENSIGN-BICKFORD COMPANY • SIMSBURY, CONNECTICUT

PRIMACORD-BICKFORD Detonating • Fuse •

Republic Quality MEANS ADDED SERVICE IN CHALLENGER TRANSMISSION BELTING

Case records of powerful, heavy duty Challenger Reprene transmission belts outworking and outwearing previous belts are common in the quarrying and stone crushing industries. Such performance is a long-standing, consistent reputation with this well-known belt . . . a reputation that Republic guards zealously with highest quality standards of production. For example, the heavy, hard-woven belt duck employed is closely inspected for perfection and each ply must be continuous in full width—without seams or splices. Such attention to top quality, from start to finish, is Republic's guarantee of added strength, flexing life, service-ability. Call your nearby Republic Distributor.



WE ARE PARTICIPANTS IN THE OWNERSHIP AND OPERATION OF NATIONAL SYNTHETIC RUBBER CORPORATION

REPUBLIC RUBBER

DIVISION

LEE RUBBER & TIRE CORPORATION

YOUNGSTOWN 1, OHIO

REPUBLIC INDUSTRIAL PRODUCTS
YOUNGSTOWN, O

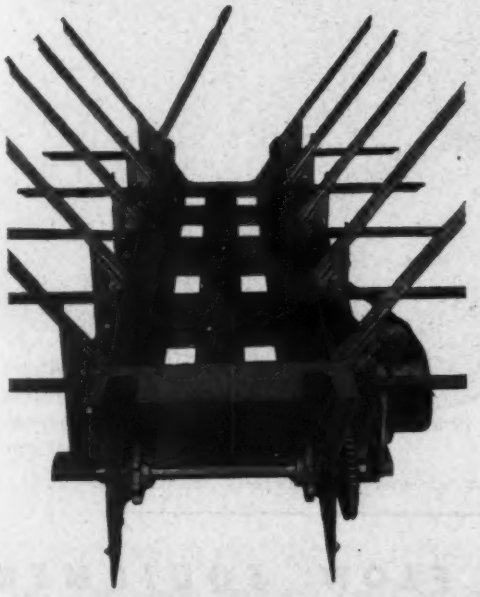
LEE DELUXE TIRES AND TUBES
CONSHOHOCKEN, PA

your SPREADING PROBLEMS SOLVED
with "THE NEW LEADER"

Summer or Winter—Wet or Dry there is now a NEW LEADER lime marl and rock spreader to fit your particular problem. With the new electrically welded heavy steel frame plus the wooden hopper you will have a spreader expressly designed to give you many years of hard dependable service. If you are interested in increasing your profits get in touch with us immediately. Don't wait—write or call today!

This is the 11 ft. wide bottom spreader mounted on a long wheel base Ford truck. Standard sizes are 9, 11, 13, and 15 ft. We have found through research that the hopper should be constructed of wood. This eliminates material from freezing to the sides which is so common on the all steel spreaders during cold weather. Thus with THE NEW LEADER you are assured of being able to operate in any weather and still have an even flow and distribution of material.

Here is the electrically welded heavy all-steel frame. Notice the sliding doors open changing THE NEW LEADER into a rock spreader. Within your reach from the cab is a single lever which controls the opening and closing of all the sliding doors in the spreader.



With the extremely wide bottom and the steep sloping sides you are further assured of getting a more even and accurate spread of material. The gear boxes driving the distributor discs are equipped with steel cut gears and ball bearings running in oil in a dust-proof oil-tight gear case. Steel sprockets and heavy duty chains are used.

MANUFACTURERS OF THE WORLD'S MOST COMPLETE LINE OF SPREADERS

HIGHWAY EQUIPMENT CO., INC.

Cedar Rapids, Iowa

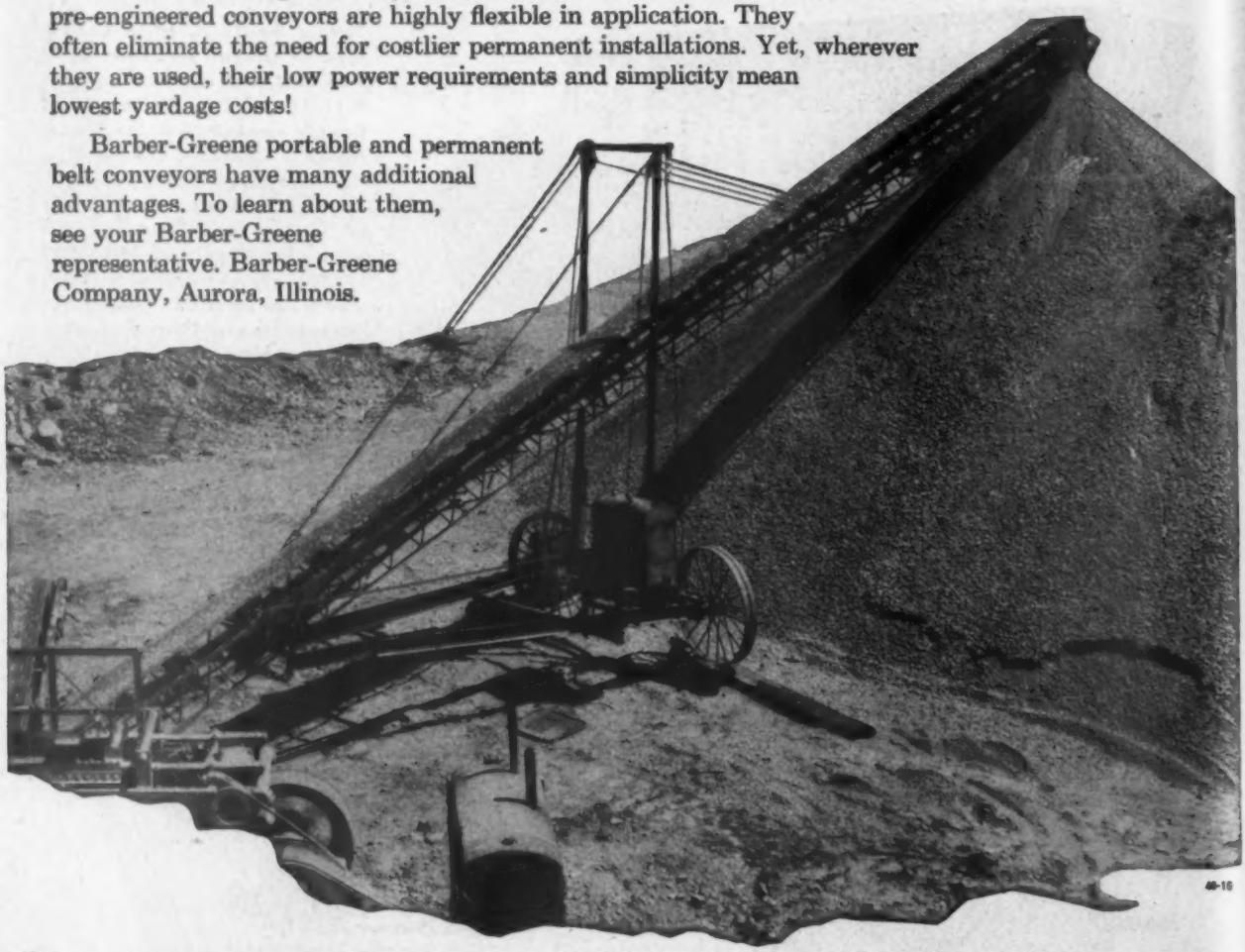
Why B-G Portable Conveyors do so much—for so little

• B-G portable belt conveyors keep materials on the move at a constant flow that means high daily capacity wherever they're put to work.

They can move all over the job, the quarry, the supply yard—stock piling and loading everything from sand to cement, crushed rock to coal.

Shortened or lengthened by the addition or removal of sections, these B-G pre-engineered conveyors are highly flexible in application. They often eliminate the need for costlier permanent installations. Yet, wherever they are used, their low power requirements and simplicity mean lowest yardage costs!

Barber-Greene portable and permanent belt conveyors have many additional advantages. To learn about them, see your Barber-Greene representative. Barber-Greene Company, Aurora, Illinois.



40-16

B-G Barber-Greene CONSTANT FLOW EQUIPMENT

LOADERS • PERMANENT CONVEYORS • DITCHERS • PORTABLE CONVEYORS • FINISHERS • BITUMINOUS PLANTS • COAL MACHINES

E. H. Kerr, plant superintendent, minces no words in expressing his opinion of "Caterpillar" Diesels: "Best Diesel I ever had. Never had any trouble — never missed a day, even when running day and night. Wouldn't trade for any other make."

Ten engines and one 'dozer-equipped tractor make this a 100 per cent "Caterpillar" Diesel-powered limestone-crushing plant near Bloomington, Ind. A number of the engines have reached working records of more than 10,000 hours. Which some operators might consider a reasonable service life for a power unit under the tortures of grit and dust.

But "Caterpillar" Diesels are virtually youngsters at that age. They have the most thorough protection against grit and dust any Diesel engine ever had. Modern, "Caterpillar"-designed dust seals, and oil, fuel and air filters, guard every possible entrance to the wearing surfaces inside these "super"-efficient power-plants. This, plus all-round ruggedness, makes "Caterpillar" Diesels the ideal power for crushers and gravel plants.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

CATERPILLAR DIESEL ENGINES

REG. U.S. PAT. OFF.

TRACTORS · MOTOR GRADERS · EARTHMOVING EQUIPMENT

The discharged veteran wears this emblem. Remember his service and honor him.

ANNOUNCING...

a new Gardner-Denver postwar breaker with the NEW SAFETY LATCH

It's a *postwar* Paving Breaker, in every sense of the word—this new Gardner-Denver Model B87! Thanks to the new Gardner-Denver safety latch—an exclusive feature—this breaker can be moved from place to place or from level to level on the job without shutting off the air—and without danger of injury to the operator. The throttle cannot open accidentally because the safety latch holds it securely against accidental openings. Quickly engaged or disengaged by a flip of the operator's thumb, the new latch works like the "safety" on the trigger of a gun—prevents accidents before they happen. Other new features of the B87 are—

SHORT WHERE IT COUNTS—*The B87 is shorter from top of gad to holding handles. It's easier to operate with standard length chisels and gads—more comfortable to operator when longer points are necessary.*

NO AIR OR OIL LEAKAGE—*Joints on the B87 breaker are not under air pressure—no wasteful nor annoying leakage of air or oil.*

FIVE-HOUR LUBRICATION—*Built-in lubricator holds enough oil for five hours of normal operation. Lubrication is positive to every working part, including gads.*

COOL HANDLES—*Heated air cannot cause discomfort to operator because air inlet is at side of cylinder and not through backhead.*

RENEWABLE CHUCK LINER—*No need to replace the entire chuck end when chuck wears to a loose fit of the gad shank. Renewable liner makes this repair quick and easy.*

TOOL RETAINER—*Extra heavy forged retainer pivots on substantial pin held positively in place. No nut to become loose.*

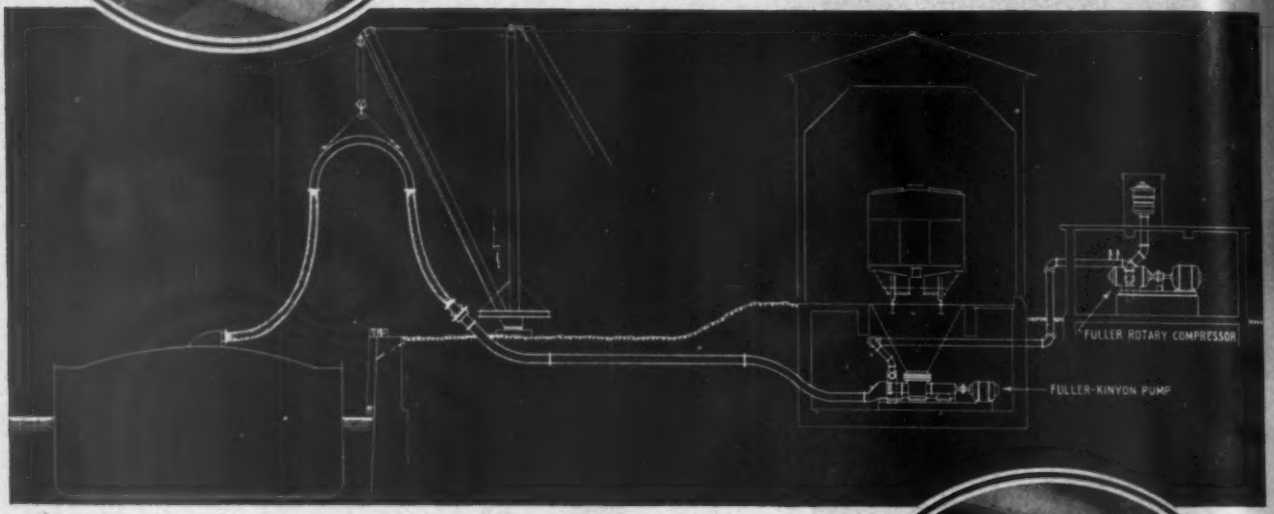
CONVERTIBLE TO SHEETING DRIVER—*The B87 is convertible to a sheeting driver by removing the standard chuck end and substituting a jaw-type sheeting driver head. Jaw assemblies adjustable to take up to 3-inch sheeting are available.*

GARDNER-DENVER
Since 1859

Gardner-Denver Company, Quincy, Illinois

Another—

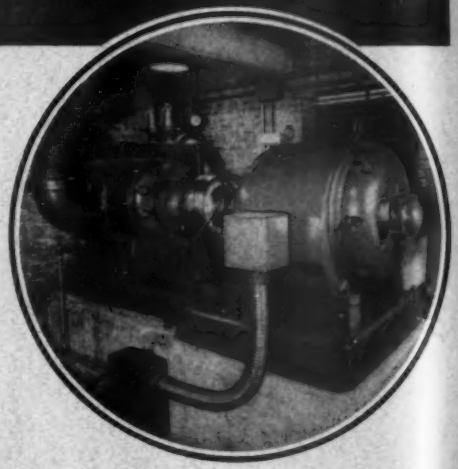
Profitable Application of the FULLER-KINYON PUMP and FULLER ROTARY COMPRESSOR



This efficient method of handling bulk Portland cement is used by a railroad company for clean, quick transfer of the cement from cars to barges.

Cement is received in hopper-bottom cars and discharged to the Fuller-Kinyon Pump in pit underneath the car. Cement is conveyed through a pipe line to the edge of the dock. For easy manipulation in loading, a flexible rubber hose is coupled to the end of the pipe line, the hose being swung, in any direction, to connections entering the hatches of the barge. Loading rate 400 barrels per hour.

Fuller Rotary Single-stage Compressor furnishes air for this conveying system, 890 c.f.m., 20-lb. pressure . . . air when and where needed at pressures to do the work most economically and efficiently.



FULLER COMPANY

CATASAUQUA, PENNSYLVANIA

Chicago 3 - 120 So. LaSalle St.
San Francisco 4 - 421 Chancery Bldg.
Washington 5, D. C. - 618 Colorado Bldg.

FULLER COMPANY

FULLER-KINYON, FULLER-FLUXO AND THE AIRVEYOR CONVEYING SYSTEMS . . . ROTARY FEEDERS AND DISCHARGE GATES . . . ROTARY AIR COMPRESSORS AND VACUUM PUMPS . . . AIR-QUENCHING INCLINED-GRATE COOLERS . . . DRY PULVERIZED-MATERIAL COOLER . . . AERATION UNITS . . . MATERIAL-LEVEL INDICATORS . . . MOTION SAFETY SWITCH . . . SLURRY VALVES . . . SAMPLERS

C-43

INVESTIGATE *TOURNAPULL* ECONOMIES FOR YOUR STRIPPING OPERATIONS

THE equipment investment for a three-unit, 15-yd. Tournapull fleet, with snatch loading 113 HP crawler tractor equipped with dozer for road maintenance and Rooter for breaking up hard material, is less than half that for a shovel-truck combination of equal load and haul capacity. Four men operate this complete Tournapull stripping outfit. With a dump boss and foreman you have a six-man crew.

Output capacity per eight hour shift at 85% operating efficiency (50 minute hour) on an average 1000 foot level one-way haul would be 3120 yards bank measure (see table below). Operating life of Tournapulls is usually figured at 10,000 hours . . . there are many units well over this figure.

Maintenance is exceptionally low . . . dual tire troubles are eliminated . . . there is none of the spring maintenance that runs up costs. Complicated waste motion (and wear) of shovel-to-truck loading is saved, there is no waiting at shovel . . . each Tournapull is a complete operating unit. Service and breakdown delays are localized to one unit . . . rest of fleet goes right on working.

OUTPUT FOR FLEET OF THREE TOURNAPULLS

50 minute hour operating efficiency. Level haul on good pit roads. Loading average scraper material. Bank measure.

Length of haul (one way)	400'	600'	800'	1000'
Yds. per hour.	480	450	420	390
Yds. per 8 hours.	3,840	3,600	3,350	3,120
Yds. per 24 hours.	10,400	9,450	8,820	8,190

24 hour production, 3 hours allowed for maintenance. For longer hauls, figure at 14 m.p.h.

See your LeTourneau distributor and let him arrange to have our field engineers study your open pit properties and suggest a layout for Tournapulls with output and cost estimates.

CM4PQ

This United Clay Mine, Kaolin mine in Georgia, formerly stripped by dragline and trucks, was easily adapted to Tournapull excavation when Wm. Anderson was awarded stripping contract for 50,000 yards.

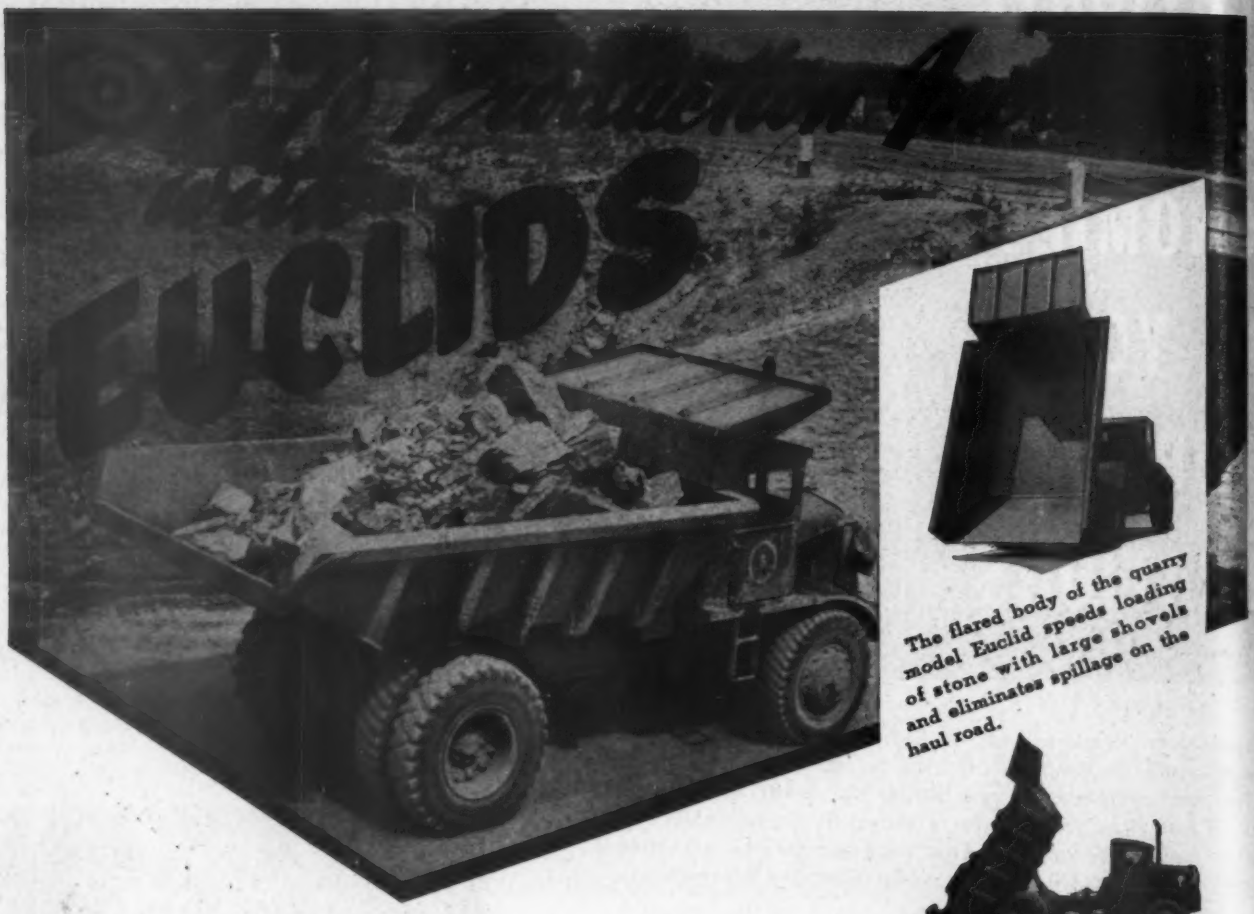
Tournapulls work from the surface down, can uncover the pit in strips or sections, dump in off-seam areas, or in mined-out cuts.

Tournapulls travel on level road at top speed of 14.9 m.p.h. Big tires (5'6" diameter), powerful engine (150 h.p.), effective weight distribution for high traction, long wheelbase . . . provide fast cycles over pit roads, good hill climbing ability, beat trucks for all weather operation.

Manufacturers of Tournapulls, Angledozers, Bulldozers, Tiltdozers, Carryall Scrapers, Power Control Units, Rooters, Tournatrailers, Tournacranes, Tournatrucks, Sheep's Foot Rollers, Tournarope, Tournaweld, Tournalift

LETOURNEAU

PEORIA, ILLINOIS • STOCKTON, CALIFORNIA



The flared body of the quarry model Euclid speeds loading of stone with large shovels and eliminates spillage on the haul road.

Tapered chute construction and high dumping angle mean quick, clean shedding of the load — save time in dumping.

● After more than 40 years of quarry operation by rail, The Bessemer Limestone and Cement Co. converted its haulage system to heavy duty trucks thereby achieving a production increase of approximately 30%. The job involves removal of overburden and delivery of blasted rock to a crushing plant. At this quarry in western Pennsylvania, Bessemer operates 5 Quarry Type Rear-Dump Euclids.

After receiving a 15-ton load from a 5 cu. yd. shovel, the Euclids travel 6500 feet to the crushing plant at an average speed of 12.3 m.p.h. Total round trip time averages 13 minutes — better than 4 trips per hour.

The flexibility of truck haulage over constantly changing roads has resulted in lower costs and increased production. For overburden removal, too, Euclids have proved their efficiency and dependability.

Have you investigated the possibilities of Euclids for your own operations? Your distributor can supply helpful information and literature.

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO

★

EUCLID EARTH MOVERS

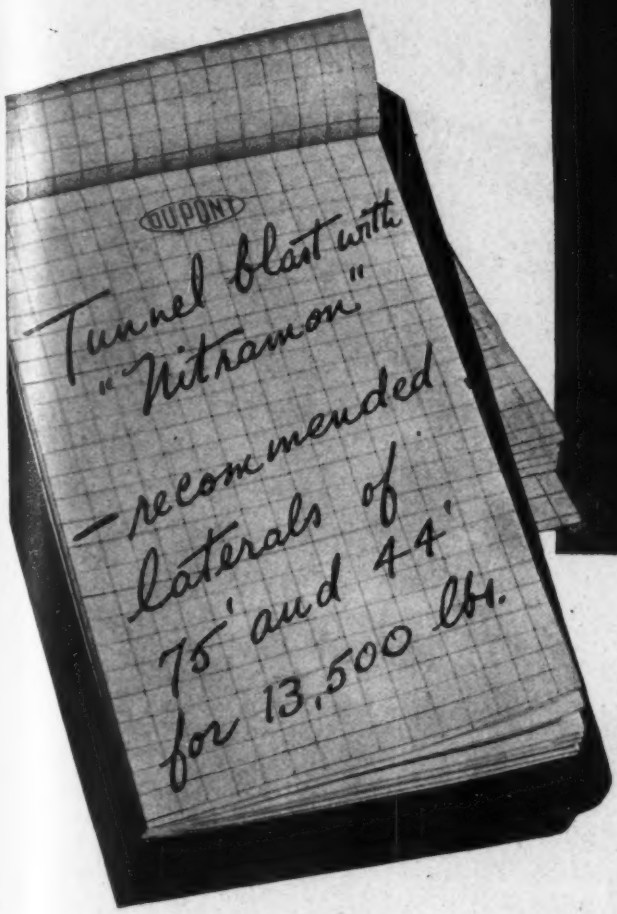
Rear-Dump Euclids
Capacities of 15 to 22 tons — 9.2 to 20.7 cu. yds., struck... loaded top speeds of 22 to 38 m.p.h.... powered by 150 to 275 h.p. Diesel engines.

Bottom-Dump Euclids
Capacities of 20 to 32 tons — 13 to 42.9 cu. yds., struck... loaded speeds from 26 to 34.4 m.p.h.... powered by 150 to 275 h.p. Diesel engines.

Euclid Loader
Fast loading of hauling equipment ...makes shallow cuts to 9'6" wide... maximum cutting depth of 24"... 54" belt powered by 150 h.p. engine.

EUCLID SELF-POWERED HAULING EQUIPMENT For EARTH ROCK COAL ORE

(Notes from a Du Pont Technical Service Man's Field Book)



DU PONT TECHNICAL SERVICE MAN inspects "Nitramon" charge resting in water in one of the units. Note electric light.

BEHIND THESE NOTES—a story of Du Pont Service and "Nitramon"... the safest blasting agent.* In a northern Maryland quarry, a 70-foot entrance tunnel with 75′ and 44′ laterals was being driven to obtain jetty size and rip-rap rock.

The entire job was laid out and supervised by a Du Pont Technical Service Man. He recommended the tunnel layout—computed the expected tonnage yield — planned location and size of the individual charges. From note book in his own words:

"We began loading 'Nitramon' at 7 A. M. Tunnel lighted every 10 ft. by 110-volt line, materially speeding up loading. Tunnels stemmed with sand where crossed by seams in stone formation—shot fired 9:45 A.M. next day. Top pulled clean to rear wall—large proportion of jetty and rip-rap sizes spread over quarry floor. Actual yield will exceed estimates by 20,000 tons. All concerned well pleased —site selected for next blast."

Here's another successful shot that shows why more and more quarry operators are turning to "Nitramon." This economical blasting agent is easy to use and safer. If *you* have a problem of quarry blasting . . . use "Nitramon" and call on a Du Pont Technical Service Man to help you. E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

* * *

*"NITRAMON" cannot be detonated by the strongest commercial caps, open flame, friction, falling objects or impact of rifle bullets. Yet, a combination of "Primacord," and "Nitramon" Primer readily detonates this safest blasting agent.

DU PONT "NITRAMON"

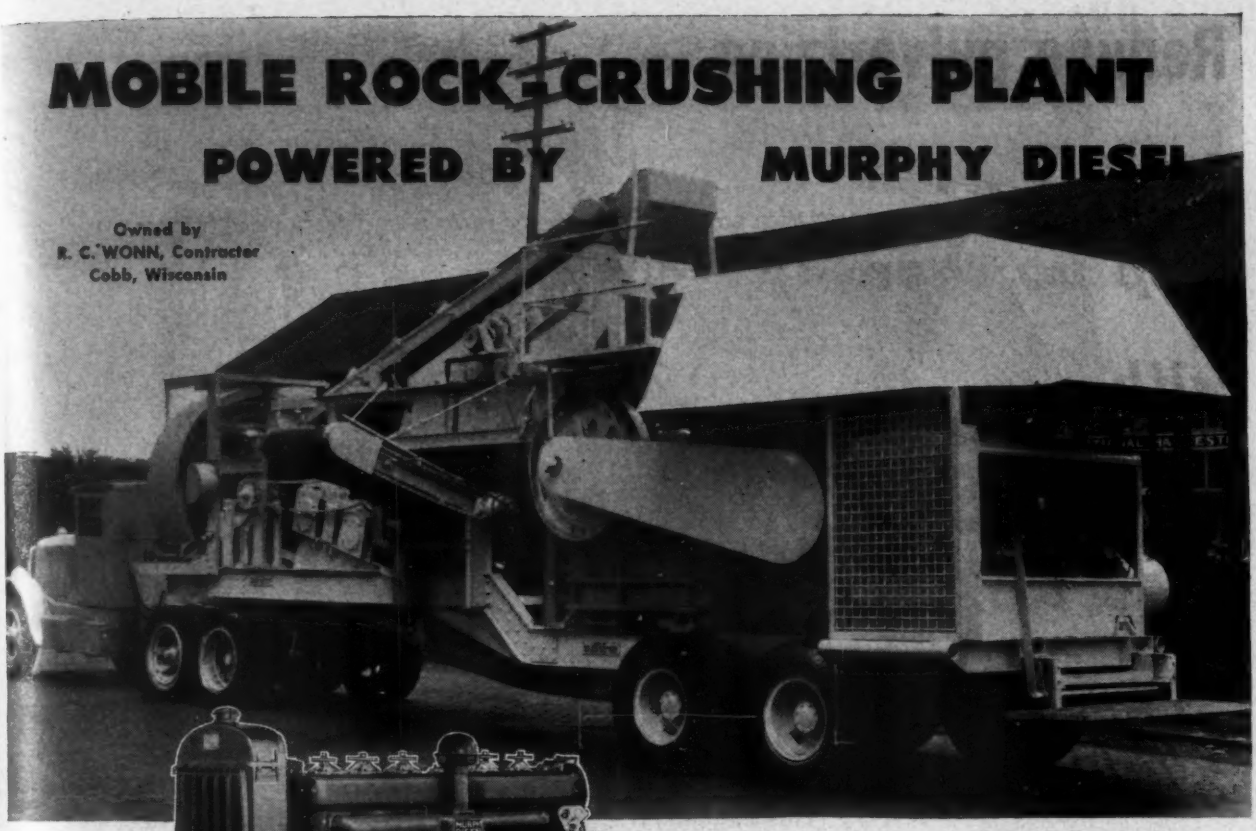
DU PONT
REG. U. S. PAT. OFF.

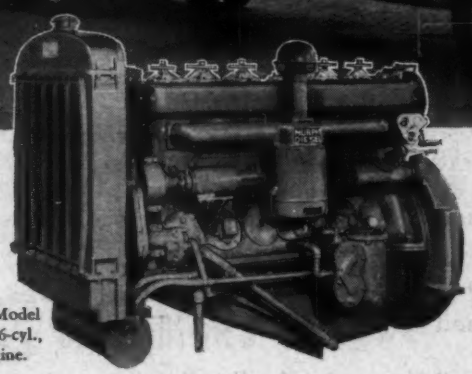
A Product of Du Pont Explosives Research

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

MOBILE ROCK-CRUSHING PLANT
POWERED BY MURPHY DIESEL

Owned by
R. C. WONN, Contractor
Cobb, Wisconsin





Murphy Diesel Model ME-66, 6 x 6½, 6-cyl., full Diesel engine.

WANT *to* CRUSH *More Rock?*

GET A ROCK-CRUSHING PLANT *powered by* MURPHY DIESEL

THERE'S one outstanding reason why you should make it a point to see that your rock-crushing plant is powered by MURPHY DIESEL. The reason is simply this: You'll get more rock at less cost! It's the reason why MURPHY DIESEL engines have become so popular in the rock-crushing field . . . and there are other sound reasons, too, for the success of MURPHY DIESELS on all types of heavy-duty jobs in the construction industry: Dependability, ruggedness, economy of operation and maintenance, compactness, portability, easy starting in any weather . . . all reasons that add up to MORE POWER, MORE PROFIT. Write for bulletin.

FIELD-PROVEN *Power*..

More Power
MURPHY DIESEL
More Profit

117

MURPHY DIESEL COMPANY

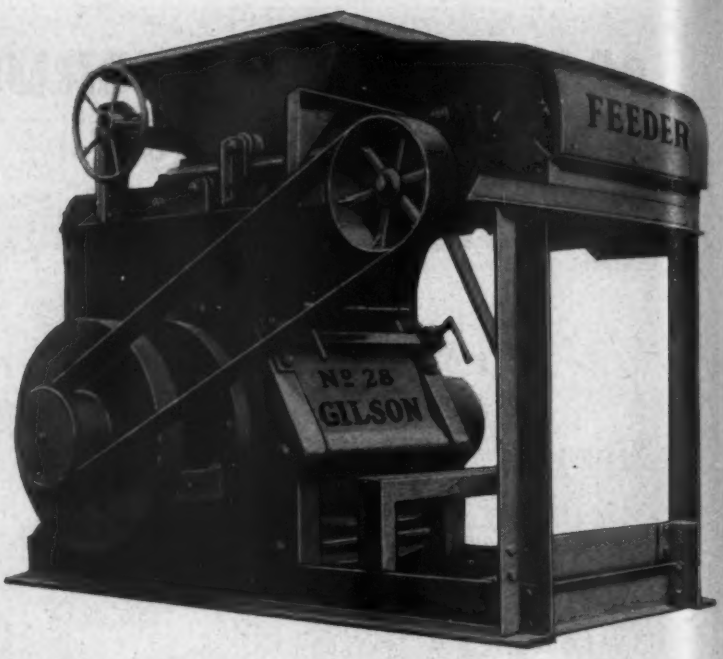
Engines from 90 to 215 H.P. Generator Sets from 60 to 115 K.W.

5315 W. BURNHAM STREET • • • • • MILWAUKEE 14, WISCONSIN

Reduce pulverizing costs . . .

step up capacity with

GILSON
No. 28



Limestone Pulverizers

This modern, rugged machine reduces large stone to agstone or aggregate sizes in one operation. A high capacity unit, crushing at 60 tons per hour, the Gilson No. 28 combines newest engineering design with rugged construction based upon 25 years of Gilson experience in the field.

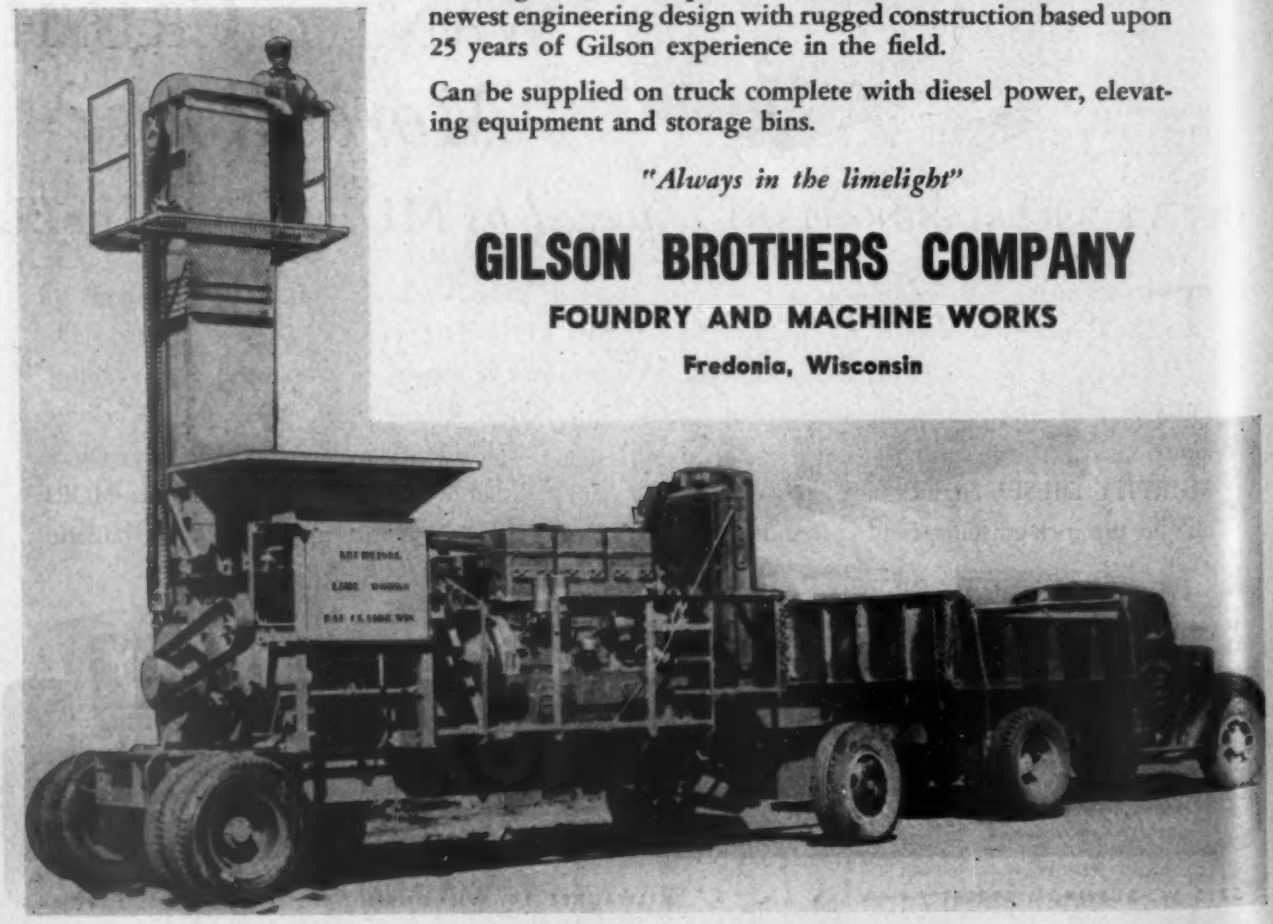
Can be supplied on truck complete with diesel power, elevating equipment and storage bins.

"Always in the limelight"

GILSON BROTHERS COMPANY

FOUNDRY AND MACHINE WORKS

Fredonia, Wisconsin



Good News FOR OPERATORS AND STRIPPING CONTRACTORS!

NEW CARRIMORS* ASSURE EVEN LOWER STRIPPING COSTS

Whether your stripping operations call for moving a small section or several hundred thousand yards of overburden, experience proves that you can often save time, manpower and equipment by handling the entire job with LaPlant-Choate "Carrimor" scrapers. You'll find this especially true with the improved models now available because they have been re-engineered from the ground up to give you easier loading, improved "grade-ability," plus faster, cleaner dumping under all conditions. Moreover, there's a LaPlant-Choate "Carrimor" for every need and budget — from the husky 8- and 14-yard outfits, to smaller 2- and 4-yard models designed for use with crawler type or high-speed, rubber-tired industrial tractors.

Why not save the expense of *separate* loading and hauling rigs and eliminate costly re-handling of overburden by doing your complete stripping jobs with *one-man-operated* "Carrimors." See your LaPlant-Choate distributor for the complete story — today!

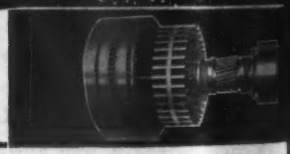
LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa; Oakland, California.

*Reg. U. S. Pat. Off.

LaPLANT-CHOATE

Job-Proved Equipment... for Lowest Possible Cost in Moving Earth

Digging With a Magnetorque Bite...



No matter how tough the digging or what the material, the bite of P&H's Magnetorque hoist is driving tonnage costs lower than ever before thought possible.

This unit — used for hoisting only — replaces about two thirds of the usual motor generator set. It actually eliminates the hoist generator, its commutation problems, reduces peak power demands to a minimum. It also eliminates the hoist slip clutch, its headaches and high maintenance costs.

Power for hoisting—under operator's control—is transmitted by electro-magnetic forces. A simple AC squirrel cage motor drives the hoist machinery through the Magnetorque unit without sacrifice of speed, control or responsiveness. Lowering is by gravity so the hoist motor never reverses.

Born of P&H's 60-year leadership in applying electrical power to the movement of heavy loads, the Magnetorque unit is another forward step toward more dependable digging at lower cost in all kinds of open pit operations. Write for complete information.

P&H

ELECTRIC SHOVELS

4465 W. National Avenue
Milwaukee 14, Wisconsin

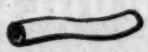
HARNISCHFEGER CORPORATION

EXCAVATORS • ELECTRIC CRANES • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS

LEADERS IN ELECTRICAL SHOVEL DEVELOPMENT

HOW TO GET BRASS MILL PRODUCTS!

BRASS, BRONZE AND COPPER... Rod, Bar, Sheet, Strip, pipe, tubing, and wire in Production Quantities.



EASY TO FABRICATE... This stock may be fabricated by normal production methods.

GOVERNMENT-OWNED SURPLUS STOCK

in many standard and non-standard grades, finishes, sizes and specifications AVAILABLE NOW in production quantities

—and new surplus declarations are being made daily.

HOW TO PURCHASE

1. Estimate, for any convenient period, your production needs in each specification, finish, gauge, etc.
2. Write, wire or phone that information to your nearest War Assets Corporation office* below. We will advise you of the location and condition of the stock you need, estimate possible delivery dates, quote prices and help arrange credit.
3. When satisfactory arrangements have been made, we will start shipments.

***WAR ASSETS CORPORATION** is a Reconstruction Finance Corporation subsidiary. When checking telephone and other directories, simply look up RFC.

VETERANS OF WORLD WAR II: To help you in purchasing surplus property from War Assets Corporation, a veterans' unit has been established in each of our Regional Offices listed below.

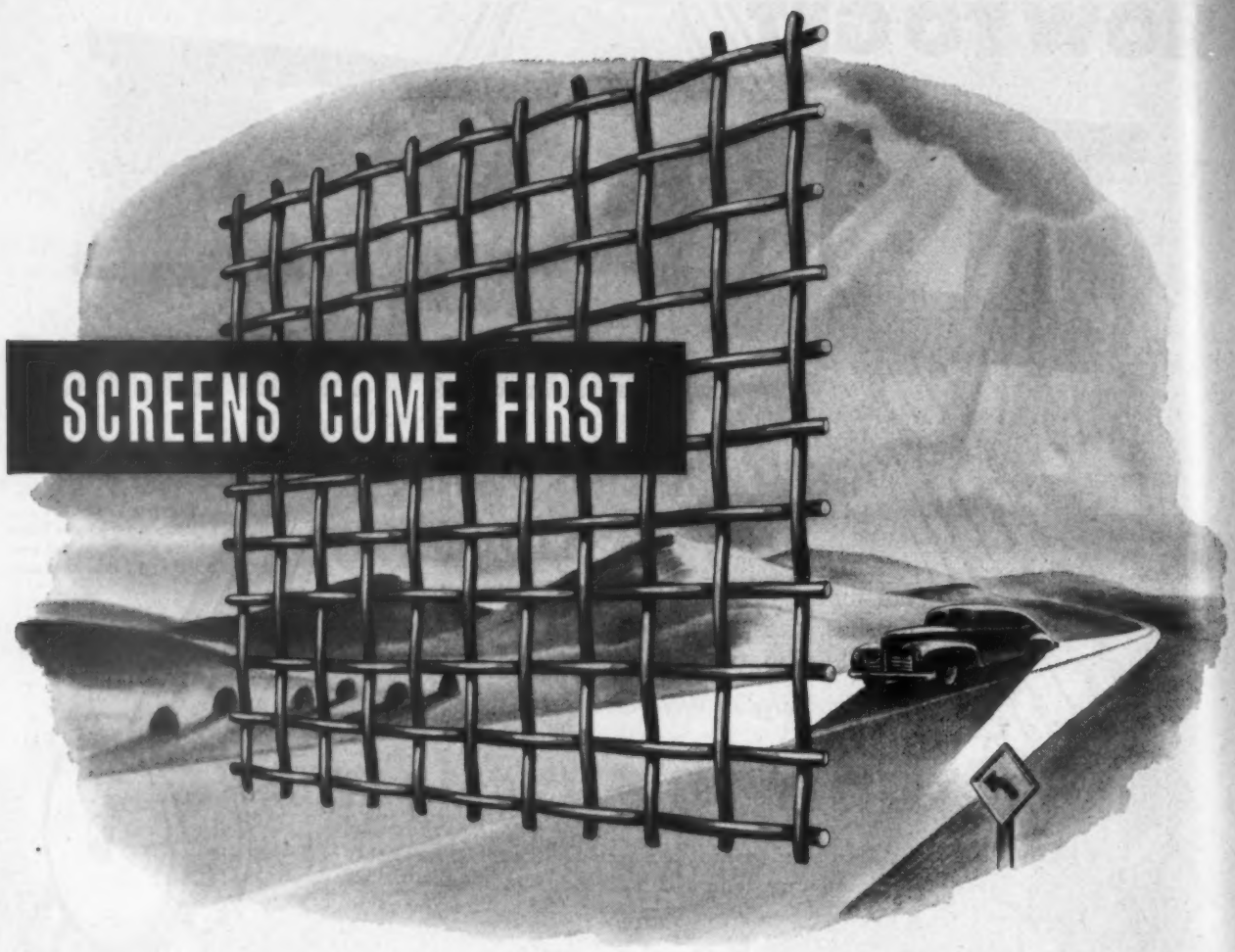
A DISPOSAL AGENCY DESIGNATED BY THE SURPLUS PROPERTY ADMINISTRATION for Surplus Producers' and Capital Goods, Aircraft and Plants formerly handled by Reconstruction Finance Corporation . . . and for Surplus Consumer Goods formerly handled by United States Department of Commerce.

WAR ASSETS CORPORATION

(A SUBSIDIARY OF RECONSTRUCTION FINANCE CORPORATION)

RFC OFFICES (INCLUDING FORMER DEPARTMENT OF COMMERCE REGIONAL SURPLUS PROPERTY OFFICES) LOCATED AT: Atlanta • Boston • Chicago • Denver • Kansas City, Mo. • New York • Philadelphia • San Francisco • Seattle • OTHER RFC SURPLUS PROPERTY OFFICES LOCATED AT: Birmingham • Charlotte • Cleveland • Dallas • Detroit • Helena • Houston • Jacksonville • Little Rock • Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • Oklahoma City • Omaha • Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • Spokane • OTHER FORMER DEPARTMENT OF COMMERCE REGIONAL SURPLUS PROPERTY OFFICES LOCATED AT: Cincinnati and Fort Worth

157-4



That's right . . . every yard of material for the new highways scheduled for construction must be accurately sized to rigid specifications.

And for most efficient sizing, operators agree that vibrating screens which are "Job-Engineered" by Robins insure that your products will meet these specifications.

On Robins screens, or any screen equipment for that matter, Robins Improved Super-Gyraloy Screen Cloth will further help you meet the most stringent specifications. This is true because a special oil-tempered wire is woven to extremely accurate standards. You can be sure that accuracy of openings will be maintained because the tough, oil-tempered wire resists abrasion . . . provides longer life.

So, before you pass the talking stage, make it a point to get the right answer to your screening problem. A qualified Robins "Job-Engineer" is available without cost or obligation. Simply write or telephone to bring him to your desk.

AMERICA'S ONLY *COMPLETE* MATERIALS HANDLING SERVICE

Hewitt and Robins unite to offer you 136 years of combined experience in "Job-Engineered" rubber products and machinery designed to answer any materials handling problem you may have.

ROBINS

CONVEYORS INCORPORATED

PASSAIC, NEW JERSEY

DIVISION OF HEWITT RUBBER CORPORATION

★ ★ ★ Editor's Page

New Philosophy Behind 1946 Liming Program

TWO BASIC CHANGES in the procedure for handling conservation allowances to farmers for liming their soils, by the Production and Marketing Administration, U. S. Department of Agriculture (successor to the A.A.A.), deserve special consideration and commendation. One is the new practice of establishing allowances according to the most urgent soil conservation needs for an individual farm as against the former practice of dividing available funds among farms according to an allowance formula on the principle of acreage; the other, the Purchase Order Plan. Both will have effect on the agricultural limestone industry but, we believe, advantageously.

The new philosophy for determining the soil conservation practices which entitles a farmer to allowances is sound, as outlined by Guy Smith (U.S.D.A.) in this issue. It sets a pattern for prior liming of soils that require liming the most and to the extent necessary, even though farmers who otherwise might be recipients of allowances may be excluded for the current year. Whereas one farmer may not be granted government-paid liming materials, because it has been determined that other soil conservation practices are more urgent in his locality, another may receive five times the tonnage to which he was entitled a year ago.

The net result, as it affects the industry, might be a more spotty distribution of agricultural limestone among farms served from a given plant but the tonnage required nationally will continue to tax the industry's ability to produce this year. Over 50 million tons annually still represents the minimum necessary to maintain soil fertility and the record of 23 million tons spread in 1944 remains far short of the goal.

This approach to the allocation of taxpayers' monies is sound for it tackles the problem of soil conservation from the standpoint of national urgency. Destruction of soil fertility through erosion and thoughtless "mining" out of the soils' minerals through excessive crop production has reached alarming proportions.

It has been said that all civilization depends upon the fertility of a few inches of topsoil. Researches by our leading soil specialists and other scientists give great emphasis to that fact. Calcium is number one on the list of minerals which human and animal life must extract from the soils through plant growth if the nation is to progress and it (calcium) is the means of setting free other minerals locked in the soil so they may become available. Mineral deficiencies in the soil lead to disease, and the availability or absence of minerals shapes the very personalities, ambitions, energy and other characteristics of the human race.

These facts, and others, having to do with soil nutrition and liming, with its acid-neutralizing and fertilization powers, are vital to all of us and it is timely that action be accelerated toward the elimination of careless agricultural practices and the replacement of soil fertility through the application of ground limestone rock—calcium soil—and other needed minerals.

Purchase Orders

The purchase order plan for transactions between farmers and suppliers of agricultural limestone, new in several States this year, is another forward step. Its objective, and result, will be to free producers and farmers from much governmental interference in their business negotiations, which is encouraging, in itself, to all of us who desire early return to a free enterprise system in business. The government, in making this move, has stated that that is its purpose. Responsibility for determining sources of supply, price and delivery arrangement are the concern of the principals—the farmer and supplier—after approval of price, and the farmer pays the difference in cash between the fair price and the applicable practice credit rate while the producer looks to the government for the balance due on a purchase order.

This expressed objective of the government, to remove itself from business transactions involving liming materials, really is a step toward turning the liming functions of the soil conservation program over to the seller and purchaser just as soon as government is convinced that the liming program will continue and increase without government payments. That time probably is not near at hand, nationally, but while the payment plan may be extended under certain conditions it may be dropped in certain areas. However, government does not intend to lose the gains that have been made toward maintaining and increasing soil fertility over the nation.

Those producers who have neglected merchandising through these lush years, because they had to be production-minded or because they thought it unnecessary, might well reconsider. Each year the farmer is having to pay more and more out-of-pocket cash per ton of agstone under the conservation program while government pays proportionately less and less. Liming is a paying proposition for the farmer and it is up to the industry, and other interested groups, to sell and keep him sold on the benefits—profits—that accrue to him, by any and every means of sound merchandising.

Bror Nordberg

Washington NEWS

LACK of skilled labor as much as materials will hold up the vast federal housing program. Wilson W. Wyatt, federal housing administrator, expressed this view at the recent National Association of Home Builders convention and exposition at the Stevens Hotel, Chicago. He pointed out that instead of the 650,000 workers now employed on-site and off-site in producing homes, the industry will need 2,150,000 at the peak of the building program. Protesting a charge that the National Housing Agency is being transformed from an expediter into a champion for socialized housing, Mr. Wyatt said that out of 2,700,000 home units contemplated for 1946 and 1947, only 200,000 will be government owned and these units will be erected on college campuses from materials taken from army barracks.

Civilian Production Administrator John D. Small, at the same meeting, warned the building industry that the government plans to curtail all "deferrable and non-essential" construction outside the residential field. At present H-H veterans' housing below $10,000 is handled by the F.H.A. and the C-C veterans' housing, over $10,000 by the C.P.A.

It has been pointed out that the plan to channel all building materials into housing for veterans may tend to restrict the program. Comparatively few veterans have sufficient funds to finance purchase of homes even with the so-called liberal loan privileges. There is little incentive to erect apartments as the O.P.A. restrictions on raising of rents has made this class of property unprofitable, even with the more liberal interpretation of rent appraisal for new construction.

The Administration bill to place ceilings on the prices of both new and old housing has probably been definitely killed by action in the House, and the Wolcott bill providing for a housing expediter with authority to channel construction materials into home building will have a much better chance of passing. This bill would authorize veterans to borrow up to 90 percent of the cost of a home at a maximum of 4 percent interest, and would give them priority on new home purchases. One of the provisions in the Administration bill which was roundly condemned by both Democrats and Republicans was the payment of subsidies to the producers of building materials.

Cement Price Increase

Effective February 21, the O.P.A. granted an increase of 20c per bbl. to portland cement producers in Georgia, Alabama, Tennessee, Louisiana, and Mississippi.

Simplified Trade Practices

Secretary Henry Wallace of the Department of Commerce has agreed to the suggestion of the Policy Committee on Standards that the divisions of Simplified Trade Practices and Commercial Standards be transferred out of the Bureau of Standards. The Bureau of Standards functions would be confined to basic research, furnishing of facts, measurements and technical assistance in the development of adequate testing methods. The logical place for the Simplified Trade Practices and Commercial Standards divisions is the new Office of Domestic Commerce, in the opinion of Secretary Wallace.

The following functions are suggested for these transferred divisions:

1. As recommended by your Committee, sponsor and perform basic research in the economic and marketing fields for the American Standards Association and other groups and organizations engaged in formulating voluntary standards or desiring to initiate standards;

2. As recommended by your Committee, act as sponsor for groups in proposing standards to the A.S.A. for issuance as American Standards;

3. Retain the Department's present function of initiating and proposing to the A.S.A. or to any other group or groups the development of voluntary standards where the Department finds on the basis of economic studies that such standards would be desirable in the public interest; and

4. Retain the function of publishing a voluntary standard developed by a group if that group requests the Department to publish. Such standards will be published by the Department of Commerce (not the National Bureau of Standards) and will clearly indicate the industry or other group or groups on whose behalf the Department is publishing. However, where testing methods or the research of the National Bureau of Standards have contributed to the establishment of particular standards, appropriate credit will be given to the Bureau in publication.

Increase Florida Block Prices

Concrete block manufacturers recently received an increase in O.P.A. ceiling prices, which includes Areas 1, 2, and 3. The following table gives maximum prices for Grade "A" concrete blocks (having a compressive strength of 1000 pounds per square inch gross area), and Grade "B" concrete building blocks (having a compressive strength of 700 pounds per square inch gross area), all in accordance with American Society for Testing Materials Standards Specifications for Hollow Load-Bearing Concrete Masonry Units C90-44, produced within the three areas described below in Broward, Collier, Dade, Hendry, Indian River, Martin, Monroe, Palm Beach, St. Lucie Counties in the State of Florida, shall be as follows:

A separate charge for truck deliveries was set up for a 20-mile radius, and an additional 10-mile radius, ranging from one cent to 2½ cents for first 20 miles and ½ cent to one cent for an additional 10 miles.

FLORIDA CONCRETE BLOCK PRICES

Size	Maximum prices per block f. o. b. plant Area 1	Area 2	Area 3
Grade A			
8 x 8 x 16	$0.13	$0.14	$0.15
8 x 8 x 16, lightweight	....	.125	....
8 x 8 x 16, partition	....	....	.14
8 x 12 x 16	.21	.22	.23
4 x 8 x 16	.0875	.0925	.0975
8 x 8 x 16 (corners and jams)	.13	.14	.15
8 x 12 x 16 (corners)	.21	.22	.23
8 x 8 x 8 (single corners and half jams)	.0875	.0925	.0975
8 x 4 x 16 or 8 x 3 x 16, partition tile	.0875	.0925	.0975
Grade B			
8 x 8 x 16	.12	.13	.14
8 x 12 x 16	.195	.205	.215
4 x 8 x 16	.0825	.0875	.0925
8 x 8 x 16 (corners and jams)	.12	.13	.14
8 x 12 x 16 (corners)	.195	.205	.215
8 x 8 x 8 (single corners and half jams)	.0825	.0875	.0925
8 x 4 x 16 or 8 x 3 x 16, partition tile	.0825	.0875	.0925

What B & W knows about Nose Ring Castings . . . CAN SAVE YOU MONEY

Outlasted Others 4 to 1

Unretouched photo (above) of B&W Nose Ring Castings on rotary kiln, still in service after three and one-half years of severe use. Previous castings on same kiln failed after approximately nine months' service. Other installations have served nearly five years and are still going strong.

FOR five years, cement plants having serious difficulty with the discharge ends of kilns were the subject of an intensive study by B&W engineers. Many of the problems revealed by these field studies were solved by the development of B&W High-Alloy Nose Ring Castings, which are now performing satisfactorily in a number of prominent cement plants. B&W Nose Ring Castings can help you reduce kiln maintenance and avoid costly shutdowns for several reasons:

1. Reinforcing ribs, in compression against kiln shell, keep castings straight and true, and prolong brick life. Belling out and warping of kiln mouth, due to expansion of castings, overcome by improved design and method of mounting castings.
2. Special alloy of 25% Chromium—20% Nickel, developed by B&W for nose ring service, has superior oxidation-resistance and low rate of permanent growth, giving castings longer service life.
3. Initial installation costs are lower than for conventional designs because B&W Castings are much smaller and lighter in weight. B&W has pattern equipment for most standard sizes—which usually means quicker delivery and elimination of pattern charges.

Let us tell you more about the advantages of B&W Nose Ring Castings.

S-70

Water-Tube Boilers, for Stationary Power Plants, for Marine Service . . . Water-Cooled Furnaces . . . Superheaters . . . Economizers . . . Air Heaters . . . Pulverized-Coal Equipment . . . Chain-Grate Stokers . . . Oil, Gas and Multifuel Burners . . . Seamless and Welded Tubes and Pipe . . . Refractories . . . Process Equipment.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
85 LIBERTY STREET, NEW YORK 6, N.Y.

A Quarter Century Too Soon?

LOOKING THROUGH the files of ROCK PRODUCTS for 1920 and 1921 for another purpose I came upon an historical incident which had been forgotten. It was the report of a meeting held in Chicago on September 8, 1920, under the auspices of the Gypsum Industries Association, for the purpose of organizing of a Rock Fertilizer Association. Present were representatives of the Gypsum Industries Association, the National Lime Association, the Southern Agricultural Limestone Association, the phosphate rock industry, publishers of farm journals, bankers, agricultural machinery manufacturers and scientists.

Dr. Wm. Crocker, University of Chicago, in his capacity of agricultural adviser to the Gypsum Industries Association, made the principal address on a "Natural Rock System of Fertilizers," the theme of which was that soil fertility could best be restored by the same process that nature produced the original fertility —by fine grinding rocks that contain the necessary mineral elements. Of course, the most important rocks to grind were limestone for calcium, gypsum for calcium and sulphur, phosphate rock for phosphorus.

At that time the lime, gypsum and phosphate rock industries were looking toward the development of new markets. Ground limestone was being slowly recognized as a necessity in any scheme of restoring worn-out soils, but the influence of the well-organized commercial fertilizer industry was too great for much of any scientific recognition to be given to pulverized phosphate rock or gypsum.

The next we hear of the proposed association is a prospectus and an invitation to join the Association of Natural Soil Fertility Resources, with H. H. Macdonald, secretary of the Gypsum Industries Association, as acting secretary. The prospectus states: "An economic and permanent fertility system can be developed based on the use of natural mineral fertilizers. Between them they supply calcium, sulphur, phosphate and potash; add nitrogen to the soil by increasing the growth of legumes; neutralize soil acidity; conserve the plant foods in manure; render available plant foods which already exist in the soil and in each other."

Shale for Potash

Subsequently Dr. Crocker wrote an article for ROCK PRODUCTS (published May 7, 1921) on the possibilities of potash shales as a source of potash. He quotes Bulletin No. 232 of the University of Illinois Agricultural Experiment Station as proof that certain potash shales, finely ground and mixed with muck soils deficient in potash, are a most excellent source of potash; though the potash in these shales is insoluble, it becomes readily available to the crop when added to such soils.

Another meeting of the Association was held the first week in May, 1921, at which Dr. Crocker elaborated on the purposes of the organization. He said in part: "We are just on the verge of finding out how much mineral nutrition means to plants and animals. This Association is made up of a group of men who are producing one or more of certain plant nutrients, and the idea is to combine these in various ways to supply the needs of various soils and crops. The commercial fertilizer people are putting in their products every element that might be needed—consequently the farmer pays for elements that may not be needed on his soil or crop. If the method is carried out that this Association proposes, we shall add only the necessary things in the different regions for the given crops we care to grow. In some regions combinations of lime, phosphorus, sulphur or potash will be needed; in others, only one of these."

End of the Effort

That appears to have been the last heard of the Association of Natural Soil Fertility Resources—a poor name in our opinion. It might better have been called the Natural Rock Fertilizer Association in line with the original idea. Presumbably the commercial fertilizer interests did not like the idea, and Dr. Crocker left Chicago not long after to become managing director of the Boyce Thompson Institute for Plant Research at Yonkers, N. Y. Though I had completely forgotten all the foregoing details, the impression left by these meetings must have been permanent, for readers of ROCK PRODUCTS will recognize a familiar theme.

Time to Start Again?

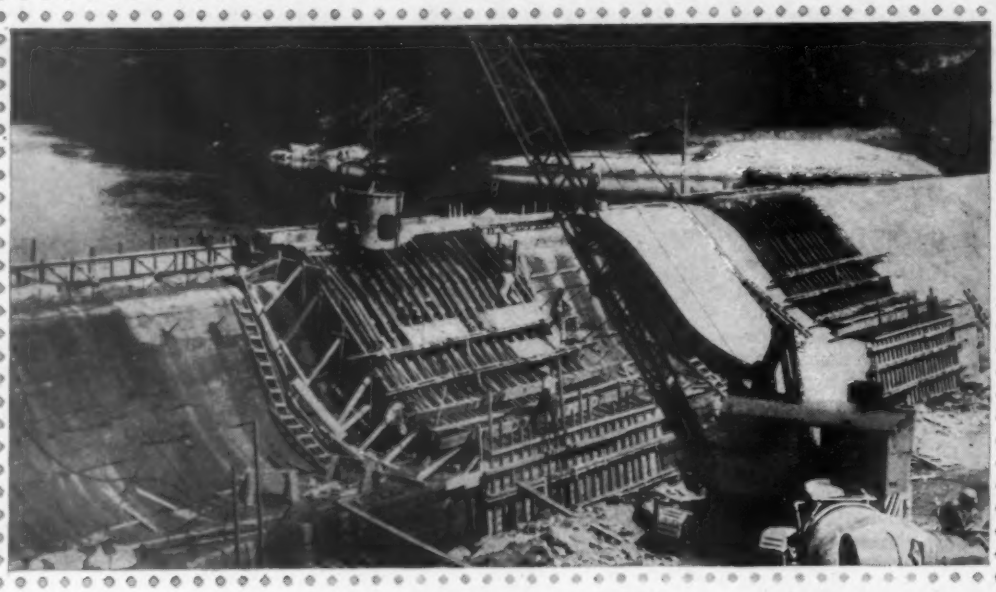
The most immediate need of long-cultivated soils is undoubtedly lime in some form, and development in the use of agricultural lime and limestone during the past 25 years has been little short of marvelous. But, it is now being realized that because lime does make other mineral elements in the soil more readily available for plant food, it also hastens the exhaustion of those other mineral elements. In other words, continuous use of lime or limestone and nothing else will leave the soil more exhausted and sterile than it was originally. The element first used up appears to be all the original phosphorus; so many corn-belt soils are now in as much need of phosphorus as of calcium. Most clay soils have enough potash to last a long time, and potash is not so important an element in plant and animal nutrition as some others.

A great deal has been learned about the part minerals play in plant and animal nutrition since Dr. Crocker's talks in 1920 and 1921. To the four mineral elements, calcium, sulphur, phosphorus and potassium that he mentioned have been added barium, boron, chlorine, chromium, cobalt, copper, fluorine, iodine, iron, lithium, magnesium, manganese, nickel, sodium, zinc. Small amounts of some of these are very important to healthy plants and animals. Therefore, there is all the more reason for using rock fertilizers which contain at least traces of these elements.

The best and longest lasting soils are probably those of glacial origin because they contain rock particles of all kinds of rock and deep plowing turns up fresh ones. The bed rocks of the earth's crust, such as granite, contain practically all the necessary elements, although to free these for early use as plant food, additional amounts of lime and gypsum are needed. However, granite dust, or basalt dust, or even slate dust, would be a better "base" for fertilizer than many "fillers" that the commercial fertilizer manufacturers use, because these old rocks all contain appreciable amounts of the scarcer elements.

It would appear that producers of ground limestone, ground phosphate rock, ground gypsum, and any other kind of rock which contains plant food elements, could very logically get together to promote a natural system for increasing and maintaining soil fertility.

Nathan C. Rockwood



Repair Work on dam of Western Massachusetts Electric Co. which had been exposed to 40 years of alternate freezing and thawing. H. A. Moody, Hydraulic Engineer; Daniel O'Connell's Sons, Inc., Holyoke, Mass., Contractors; Duraplastic ready-mixed concrete furnished by Construction Service Company, Springfield, Mass.

Repairs to 40-Year-Old Dam made with AIR-ENTRAINED CONCRETE

A hydro-electric station of the Western Massachusetts Electric Co. had been exposed to the rigor of 28 winters. To repair it the engineers specified Atlas Duraplastic air-entraining cement.

The resulting concrete was so satisfactory that the engineer again used Duraplastic cement to repair a dam that had been exposed to 40 New England winters.

He states that—

1. **Duraplastic cement was used to fortify the concrete against freezing and thawing weather.**
2. **With this cement there was practically no segregation or bleeding.**
3. **This cement so improved workability that the entire surface is free from stone pockets and sand streaks.**
4. **Such a surface probably will longer resist the abrasive action of overflowing water.**

Atlas Duraplastic cement complies with ASTM specifications and sells at the same price as regular cement. Send for details. Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building New York 17, N. Y.

OFFICES: New York, Chicago, Albany, Boston, Philadelphia, Pittsburgh, Cleveland, St. Louis, Minneapolis, Duluth, Kansas City, Des Moines, Birmingham, Waco. RP-D-31

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

A UNIVERSAL ATLAS PRODUCT

AIR-ENTRAINING PORTLAND CEMENT

"THE THEATRE GUILD ON THE AIR" *Sponsored by U. S. Steel—Sunday Evenings—ABC Network*

the *Personal Side* of the NEWS

Named Vice-President

A. J. CAYIA, general superintendent at Gulliver, Mich., of the Inland Lime and Stone Co., Chicago, Ill., and Manistique, Mich., has been pro-

A. J. Cayia

moted to vice-president and general manager, with headquarters at Manistique, Mich. A. W. HEITMAN, formerly superintendent, has succeeded Mr. Cayia as general superintendent. HOWARD M. GRAFF, formerly chief engineer at the Port Inland, Mich., plant, will replace Mr. Heitman as superintendent. WILLIAM A. CORSON, assistant sales manager, succeeds the late Gordon W. Hughes as sales manager. Mr. Cayia and Mr. Heitman have been with the company, a subsidiary of the Inland Steel Co., since it was organized in 1928. Mr. Graff was employed in 1936, and Mr. Corson joined the sales staff in 1937.

Consultant

ROY PEETS, superintendent of the Grand Rapids Gravel Co., Grand Rapids, Mich., since the company was organized in 1920, has retired from active service but will continue to serve in a consulting capacity. GEORGE BROCKER, who has been associated with the company for a number of years, will succeed Mr. Peets as superintendent.

Wolverine Changes

C. S. ANDRES, formerly associated with the Lone Star Cement Corp. plants in Cuba, Houston, Texas, and Hudson, N. Y., has been appointed plants manager of the Wolverine Portland Cement Co., Kalamazoo, Mich. Mr. Andres replaces L. B. Gray who has resigned to fill a position in the machinery export business. LAURN E. HETRICK has been appointed chief chemist to replace L. C. Nodell who has resigned. Mr. Hetrick has held the position of chemist for the Green Bag Cement Co. of Pennsylvania, Pittsburgh, Penn., and the Longhorn Portland Cement Co., San Antonio, Texas, as well as the Cementos Guaralajara and Cemento Portland del Bajio of Mexico. DAVID SAMUEL, formerly an engineer with the Bethlehem Steel Co., Bethlehem, Penn., has been made assistant to Mr. Andres.

Lime Plant Manager

KEITH WAUGH, production director of the Bluebonnet Ordnance plant of the National Gypsum Co., Buffalo, N. Y., has been made manager of the Bellefonte, Penn., lime plant, replacing Bayard Magee who is supervising construction of the lime plant at Kerns, Va. Mr. Waugh has been associated with the company since 1939, as manager of the Saltville, Va., plant which was acquired by the company in that year. In 1942 he was transferred to Waco, Texas, and Bluebonnet. He was mine superintendent at the Saltville plant before it was purchased by the National Gypsum Co.

Veteran Buys Block Co.

VICTOR CALDWELL, a veteran of 42 months' service in Europe with the 30th Infantry Division, has acquired the interest of E. Throckmorton in the cement block plant on South Union street, Bethel, Ohio, and is now associated with Robert Pribble in the manufacture of concrete block. The new firm will be known as the Bethel Block Co.

Ideal Chief Chemist

J. T. HARGIS, analyst in the laboratory at the Okay, Ark., plant of the Ideal Cement Co., Denver, Colo., has been appointed chief chemist at that plant, succeeding Charles R. Jackson who died on January 24, 1946.

Moves Office

FULLER Co., Catasauqua, Penn., has announced the removal of the Chicago district office to 120 S. LaSalle St., Room 1951, with C. C. Kaesemeyer as manager.

Manages Gravel Firm

R. MELVIN POTTENGER, who has been associated with A. Teichert and Sons, Inc., since 1928, has been named manager of the Perkins Gravel Co., Sacramento, Calif., which is owned and operated by the Teichert concern.

Appointed Engineer

ALBERT E. FROSCH, former secretary and general manager of the Eastern Ohio Sand and Gravel Co., East Liverpool, Ohio, has been appointed resident engineer for the new $4,000,000 chemical plant at Saltville, Va., for the Mathieson Alkali Works, Inc., New York, N. Y. This plant, which is to be erected by Sanderson & Porter of New York, will manufacture lime, soda ash and dry ice and also will furnish power for the town of Saltville. Mr. Frosch is in New York working on engineering and design for the plant. He joined Sanderson & Porter in 1941 in the construction of an ammunition and shell-loading plant at Joliet, Ill., which was taken over by the Army Ordnance Department at the end of the war.

Becomes Sales Manager

JOHN R. SPENCER, director of the Soil Improvement Department of the Illinois Agricultural Association, Chicago, Ill., since 1937, has resigned to take a position as sales manager with the Donald F. Butler Co., Franklin Grove, Ill. Mr. Spencer's nine years with the Association resulted in the increased application of limestone and rock phosphate on Illinois farm soils. His work was concerned with supervision of agricultural limestone produced by the 150 quarries serving Illinois farmers and similar work on rock phosphate shipments. He also did considerable promotional and relationship work and has served on various committees. He is currently on the Governor's committee on de-

John R. Spencer

velopment of the State's natural resources. Previous to his position with the Association he served three different counties in Kentucky and Illinois as farm adviser.

Returns to Sand Co.

ROBERT PURDY, recently discharged from the Army, has returned to his former position as manager of the sand business of the Killbuck Sand and Gravel Co., Killbuck, Ohio. Mr. Purdy served 27 months in the armed forces, 18 months of which was spent with the Army Aviation Engineers in India, northern Burma and China. His last assignment was in Shanghai. Clyde L. Purdy, a brother, has been serving for the past two years in the U. S. Navy in the South Pacific at Iwo Jima, Okinawa and Leyte, and is now stationed at Galveston, Texas, where his ship is being decommissioned. Wesley W. Purdy of Mansfield, Ohio, his father's brother and partner in the sand and gravel business, also served in the Navy and when released from active duty was a full commander.

A.S.C.E. Vice-President

GAIL A. HATHAWAY, of the office of Chief of Engineers, U. S. War Department, Hyattsville, Md., has been elected vice-president of the American Society of Civil Engineers, succeeding A. C. Polk of Birmingham, Ala., who died recently. This announcement was made by W. W. Horner, St. Louis, Mo., national president of the Society. Mr. Hathaway has been an active member of the Society since 1934, and was president of the District of Columbia section in 1942.

Committee Member

E. C. SAWYER, service engineer, Millwood Sand Co., Zanesville, Ohio, has been appointed to a committee on arrangements for the 50th anniversary convention and exhibit of the American Foundrymen's Association, which will be held in Cleveland, Ohio, May 6 to 10.

Joins Block Company

OSCAR JOHNSON, Pullman, Wash., has announced that he will join the staff of the new Concrete Lock Block Corporation, Seattle. Mr. Johnson has been in the contracting business in Pullman.

Women Operate Sand Business for Sons

MRS. M. B. YAGER and MRS. E. H. DELKER, president and secretary-treasurer, respectively, of the River Sand and Gravel Co., Owensboro, Ky., for the past two years have been managing the sand and gravel business, with signal success, pending the return of their sons from service.

Mrs. Yager, left and Mrs. Delker, right

They both attended the recent convention of the National Sand and Gravel Association in Cincinnati, Ohio, and explained the successful outcome of their venture as the result of their having been good listeners when their late husbands, owners of the concern, talked shop. They were obliged to take over the management of the business for their boys when it was found difficult to obtain a manager. They are now preparing to relinquish the responsibilities which they assumed two years ago. Mrs. Delker's son has returned from service and Mrs. Yager's son is expected to return soon.

Retires

WILLIAM J. WOMER, traffic manager of Consumers Co., Chicago, Ill., has retired after 42 years of service with the company and its predecessors. JOSEPH A. MCCUE will replace Mr. Womer as traffic manager.

Red Cross Co-Chairman

FRANK B. WARREN, vice-president in charge of sales of the Bessemer Limestone and Cement Co., Youngstown, Ohio, has been named co-chairman for the annual Red Cross Fund Drive.

Hamilton Lott, recently discharged from U. S. Coast Artillery, with Palmetto Quarries Co., Columbia, S. C.

Returns to Private Life

W. W. KINGINGER, vice-president and superintendent of the Diamond Portland Cement Co., Middle Branch, Ohio, has retired to private life after 31 years of service with the company but will continue to serve as a member of the board of directors. Mr. Kinginger's career in the cement industry began with his employment as laboratory assistant at Nazareth Portland Cement Co., Nazareth, Penn. Following this he was successively connected with cement plants in Pennsylvania, Michigan, Canada and the British Isles. In 1911 he was retained by Ellsmere Portland Cement, Limited, for the purpose of supervising the construction of a laboratory and operating the new plant. Upon his return from England he became associated with the Diamond Portland Cement Co. as chief chemist. In 1931 he was appointed superintendent and six years later was elected vice-president.

Research Manager

WILLIAM F. NEWTON, superintendent of the Columbia Chemical Division of the Pittsburgh Plate Glass Co., Pittsburgh, Penn., has been appointed manager of research and development for the division. Mr. Newton joined the research staff in 1941. He was made division superintendent in charge of synthetic resins and related organic products two years later. Prior to his association with the company, he was employed by the Shell Chemical Co. He is a graduate of the University of California, class of 1937, with a degree of Bachelor of Science.

Heads Concrete Co.

RUDOLPH EDWARD SEDLACHEK, manager of the Rudolph yard of the Kellogg Bros. Lumber Co., Wisconsin Rapids, Wis., is head of the newly organized Stevens Point Concrete Co., Stevens Point, Wis., which will manufacture concrete block made of Waylite.

Contractors' Chairman

W. K. SHAW, vice-president and treasurer of the Turner Construction Co., New York, N. Y., has been chosen chairman of the building division of the Associated General Contractors of America and made a member of the cabinet of the president. Mr. Shaw has been a member of the Advisory Board for several years.

Retires

CHARLES E. ANDREWS, director and New England manager of Whitehead Brothers Co., New York, N. Y., has retired after 41 years of service with the company. F. B. CLARKE, who has been with the firm for 28 years, has been appointed New England sales district manager.

Explosives Chief

DR. BERNARD LEWIS, an authority on explosives and winner of the Legion of Merit for his research activities during the war, has been appointed chief of the Explosives Division of the Bureau of Mines. As a major and subsequently a lieutenant colonel in the Army Ordnance Department, Dr. Lewis directed research and development laboratories which produced improvements in artillery shells, grenades, and fuses. Twice he was awarded citations. In his new position, a post which has been vacant for some time, Dr. Lewis will supervise a unit with a similar record of war service. DR. WILBERT J. HUFF, professor of chemical engineering at the University of Maryland and consulting explosives chemist at the Bureau's Eastern Experiment Station, College Park, Md., directed the work of this division during and for several years prior to the war.

Resigns

ROY NEILAN, office manager of the Yakima Cement Products Co., Yakima, Wash., for the past eight years, has resigned from the company to devote full time to his property interests. CAPTAIN NELS MOBERG, now on terminal leave from the Army Ordnance and Supply Department at the Seattle Port of Embarkation, will succeed Mr. Neilan as office manager.

Joins Stone Co.

J. FRED COLEMAN, JR., has resigned as district materials engineer for the Pennsylvania Department of Highways to assume the position of field engineer with the General Crushed Stone Co., Easton, Penn. He will make his headquarters in Philadelphia, Penn.

Industries' Director

C. A. BROOKS, vice-president, Monarch Cement Co., Humboldt, Kans., has been appointed a member of the board of directors of Associated Industries of Kansas, to fill the vacancy left by the late Guy O. Gardner of the Ash Grove Lime and Portland Cement Co., Chanute, Kans.

Cement Plant Manager

WILLIAM R. BLAIR, sales manager of the El Paso, Texas, plant of the Southwestern Portland Cement Co., Los Angeles, Calif., has been elected a vice-president and made manager of the El Paso plant. HERMAN LIEBREICH, formerly assistant sales manager, will succeed Mr. Blair as sales manager. Mr. Blair has been with the company for 30 years. His first job was cashier and assistant bookkeeper in the sales office. He traveled in New Mexico for the company from 1917 until 1927, when he was appointed sales manager. Mr. Liebreich was employed with the El Paso plant in 1914 as assistant timekeeper and later became timekeeper, bookkeeper and then cashier. In 1925, he joined the sales department and was appointed assistant sales manager in 1929.

Appointed Director

FRANK J. BARRETT, district manager of the Portland Cement Association, Seattle, Wash., has been elected a director of the Puget Sound Savings and Loan Association. He is also serving his second term as chairman of the State Developing Committee of the Seattle Chamber of Commerce and as a member of the Chamber's Board of Trustees.

Resumes Management

EDGAR M. BROWN, who for the last several years has leased the Brown Sand and Gravel Co., Spokane, Wash., to Harold Matheson, has again taken over management of the plant. Louis M. Jones, his son-in-law, will be associated with him in the business.

OBITUARIES

E. W. LAPLANT, co-founder of LaPlant-Choate Mfg. Co., Inc., Cedar Rapids, Iowa, passed away recently after a long illness. He was 73 years old. Although he had been inactive in the business since 1927, Mr. LaPlant continued as a director of the corporation until 1944. Starting in the house-moving business in 1889, he developed equipment that was able to move blocks of buildings without interrupting the occupant's routine. In 1912 he engaged his nephew, Roy E. Choate, as a partner and in 1927 the partnership became a corporation.

PERLEY M. HALL, long identified with the development of the lime and talc industry in the Natural Bridge, N. Y., area, passed away January 21 at his home in Carthage, N. Y. He was 72 years of age.

HERMAN A. EVERLIEN, general sales manager of the mechanical goods division of United States Rubber Co., New York, N. Y., died February 21 at his home in New York. Mr. Everlien had been associated with the rubber industry for 43 years.

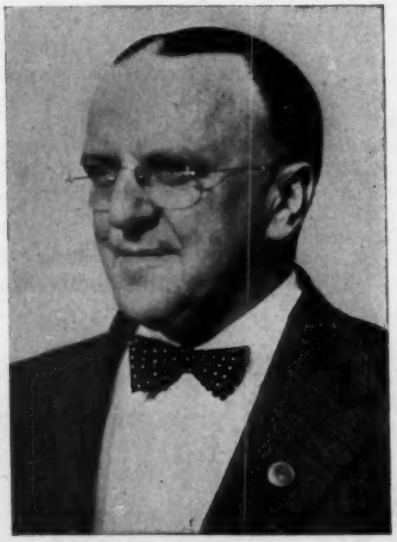
WILLIAM A. BREMMER, who founded the Bremmer Concrete Mixer Co., Los Angeles, Calif., 29 years ago, died recently at the age of 70. He had retired some years ago.

ARTHUR R. HALEY, general manager of the Columbia Cement Division of the Pittsburgh Plate Glass Co., Zanesville, Ohio, passed away February 14. He was 50 years of age. Mr. Haley had previously been associated with

Arthur R. Haley

the J. P. Loomis Coal and Supply Co., Akron, Ohio. A graduate of Akron University, he was formerly a prominent football player. During 1940 he served as president of the Akron Chamber of Commerce.

DAVID ADAM, former safety engineer for the Lawrence Portland Cement Co., Northampton, Penn., died February 26 at the age of 64. A native of Glasgow, Scotland, Mr. Adam came to America 23 years ago, and a short time later entered the employ of the cement company, serving as safety engineer for 21 years. For the past two years he was librarian in the Northampton county court house at Easton, Penn. Mr. Adam was active in the National Safety Councils and appeared as Uncle Dave on former radio programs sponsored by the local council over Station WSAN.



David Adam

FULL power from heavy duty gasoline and Diesel engines demands really effective lubrication — and you *get* it with *Texaco Ursa Oil X***. This famous detergent-dispersive oil keeps engines *clean*—resists oxidation, protects alloy bearings, prevents scuffing of rings, pistons and cylinders.

The property of detergency in *Ursa Oil X*** keeps rings free. Dispersion holds deposit-forming materials in suspension until drained. Thus, you get better compression and combustion, greater power and fuel economy.

To lubricate air compressors effectively, use *Texaco Alcaid, Algol* or *Ursa Oil.* You'll be sure of wide-opening, tight-shutting valves, free rings, more efficient operation with fewer repairs and replacements.

For Texaco Products and Engineering Service, call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants and Fuels

TUNE IN TEXACO STAR THEATRE EVERY SUNDAY NIGHT STARRING JAMES MELTON WITH HIS GUEST, ED WYNN—CBS

news OF THE INDUSTRY

Building Big Pipe Plant

LOCK JOINT PIPE CO., East Orange, N. J., will build its first permanent concrete pipe plant at Wharton, N. J. According to President Allen M. Hirsh of Montclair, N. J., the initial investment in plant will be $400,000 and when the casing shop is moved from Ampere, N. J., an additional $100,000 will have been spent. In addition to manufacture of pipe, the company will experiment with other concrete products, including prefabricated houses. It has nine plants located as far west as the Rocky Mountains. Up to the present, the company has been making concrete pipe at the location of the job. This will therefore be the first permanent plant for the manufacture of stock pipe, although the temporary plant system will not be abandoned.

Seek Glass Sand

AL ROCKETT, Denver, Colo., director of the Colorado State Planning Commission, is seeking information about deposits of silica or obsidian in the State in sufficient quantities and grade to meet the requirements of a glass jar manufacturer. The Chicago, Burlington & Quincy Railroad wants to locate a deposit for one of its shippers who is interested in establishing a glass factory in the State.

Kaiser to Build Homes

HENRY J. KAISER recently announced that he would build a minimum of 10,000 houses in California in 1946. Mr. Kaiser plans to get around scarcity of materials in his house building program by the use of substitutes. Aluminum, glass, woodconcrete, gypsum board, and various plastics will be used. The houses will sell for from $5000 to $6000.

Sand Plant Improvements

SOUTHWEST SAND AND GRAVEL CO., Dodge City, Kans., has completed improvements at its plant south of the Terminal elevator. A. L. Beller, manager of the plant, has purchased a half interest in the company from Charles Hulme, Great Bend, Kans., who will retain the balance of the interest in the business. Mr. Beller succeeds Paul Russell as manager.

Consolidate Three Plants

MCPHERSON CONCRETE PRODUCTS CO., McPherson, Kans., is building a new plant, consolidating and expanding the three now operated by the company. L. H. Anderson, manager of the company, has announced that there will be two 50- x 190-ft. buildings, a 35- x 70-ft. building housing curing rooms, an office building, four storage bins, and several small buildings. Block, silo staves, concrete burial vaults, pipe and mausoleums will be made. Ready mixed concrete also will be sold.

Merge Fluorspar Interests

UNITED STATES FLUORSPAR, INC., Minneapolis, Minn., has purchased the entire assets of the Chaffee County Fluorspar Corporation. The successor company is headed by Christ Legeros, president, and L. W. Roche, vice-president, both of Minneapolis; Peter L. Bancroft, general manager, secretary-treasurer, Vancouver, B. C., Canada; and James G. Kissner, assistant general manager. Hugo Bryan, underground superintendent, and Axel W. Johnson, mill superintendent, are both of Salida, Colo.

The company went on a 24-hr. production basis the first of the year, and expects to produce ceramic and acid grade concentrates. A pelletizer installation is now in operation to produce pellets for the metallurgical industry.

Quarry Fire

CONSUMERS CO., Chicago, Ill., suffered a large fire loss at its Ives, Wis., plant near Racine. To serve local demands for aggregates and the company's ready mixed concrete plants, a portable plant has been installed and roll crusher has been placed in operation. It is planned to build a new plant just as soon as materials and equipment can be assembled, according to John J. O'Laughlin, president.

New Ready Mix Concerns

DUNN BROTHERS has announced plans for the construction of a ready mixed concrete plant at Du Quoin, Ill.

PITTSBURG READY-MIXED CONCRETE CO., Pittsburg, Kans., will produce both ready mixed concrete and concrete block. Concrete fence posts and other specialties will be made. Jack Mitchell is manager.

Large Cement Order

LEHIGH PORTLAND CEMENT CO., Allentown, Penn., has obtained a contract for 100,000 bbls. of cement from the Huntington, W. Va., district engineers for the construction of a dam and reservoir on the New river near Hinton. Cement will be delivered from the Fordwick, Va., plant.

Sell Hawaii Plant

THE HAWAIIAN HUME CONCRETE PIPE CO., LTD., has sold its interests to the Clarke-Halawa Rock Company, Ltd.

Organize Ready Mix Concern

FRANTZ BROTHERS, general contractors, Sidney, Ohio, have announced the organization of the Sidney Ready Mix Concrete Co. The company for the present plans to operate from the premises of the Sidney Washed Sand and Gravel Co., but later a plant will be built at a new location.

Aluminum-Concrete House

REYNOLDS METAL CO., Louisville, Ky., has announced development of an aluminum and concrete house which, it is reported, can be constructed and prepared for occupancy within a week. General Building Units of Dayton, Ohio, has formulated plans for a model house of aluminum and concrete, and the Reynolds company has been setting up the first unit in Louisville.

Purchase Gravel Concern

THE VALLEY SAND AND GRAVEL CO., Phoenix, Ariz., has been purchased by the Salt River Sand & Gravel Co., Inc. Incorporators are: Frank A. Barnes, president; Kenneth L. Smith, general manager and treasurer; and Howard Glenn Truitt, superintendent and secretary. Production has been running very high, and consideration is being given to doubling plant capacity.

OPA Quarry Case

THE ST. CHARLES QUARRY CO., Overland, Mo., is defending a suit brought against the company by O.P.A., on an accusation that sales of crushed stone were made in 1945 over ceiling prices. The suit requested treble damages of $3880, and a permanent injunction.

Sell Gravel Concern

SANTA FE SAND AND GRAVEL CO., Riverbank, Calif., has been purchased by the four Rice brothers of Stockton, Calif., from W. F. Stephens. The brothers are L. F., U. A., J. L., and Louis Rice. Operations at Riverbank will be under the direction of L. F. Rice.

Seeks Gypsum Plant

RICHMOND, Calif., is seeking to have Henry Kaiser locate a new gypsum plant near Parr Terminal No. 1. Originally the plant was to be built near the Ford Motor Co., and the Felice & Perrelli Cannery Co., but the city rejected this due to so-called dust nuisance. Mr. Kaiser thereupon announced he would take his plant to Southern California, probably in the vicinity of Los Angeles.

Court Closes Cement Plant

WASHINGTON-IDAHO LIME PRODUCTS Co., Spokane, Wash., announced that it has suspended operations at its Orofino, Idaho, plant, and the company's facilities will be abandoned as soon as present stocks of finished cement are depleted. This announcement by President Otto C. Frei followed a decision of Judge A. L. Morgan of the District Court on February 23, granting an injunction restraining the cement company from operating its plants so as to deposit cement dust upon the plaintiffs property and also forbidding the company to permeate the atmosphere with "obnoxious odors." The plaintiffs were J. L. McCarthy and Ed Gaffney of Orofino.

President Otto Frei said that the company would move its manufacturing operations to another State, and will continue to serve the present extensive market for its products. Completed in 1935, the plant has a capacity of 600 bbls. a day, and comprises a rotary kiln, three tube mills, a ball mill, primary jaw crusher, secondary hammermills, and other equipment. President Frei, in making the announcement, said, "Inasmuch as the injunction sought and issued is effective immediately, and cannot be superseded by possible Supreme Court relief until such time as a favorable decision might be rendered, our products must of necessity disappear from our established markets until such time as we are in position to resume manufacture."

Concrete Products Business Booming

CIVILIAN PRODUCTION ADMINISTRATION, Department of Commerce, reports a sharp jump in the value of concrete products shipments in 1945. The report released February 25, 1946, shows that light-weight aggregate block shipments in the second quarter rose 70 percent, from 24,500,000 block in the first quarter to 41,600,000 in the second quarter. Shipments of heavy-weight aggregate block increased from 28,000,000 block in the first quarter to 52,000,000 in the second quarter, or 84 percent. All other concrete products, except joists, increased in volume. Reports from individual manufacturers indicate that this trend revealed by C.P.A. statistics continues into 1946, with manufacturers having practically depleted all stockpiles.

Add Packing Bins

WARNER Co., Philadelphia, Penn., has added a new 2-compartment bin equipped with packers for Super-Limoid and Chemical Hydrate at the Cedar Hollow, Penn., plant as a part of its modernization program to meet an anticipated increased demand. According to a recent issue of *Warner News* this new bin is located in the packing house and provides small packing bins which are separate from the main storage and are directly over the packers. The products are delivered to one of the compartments in the large storage bin, then conveyed by screws and elevators to the small packing bins, thus preventing hanging up in the storage bin and providing a constant flow to the packers.

Sell Gravel Plant

EUGENE SAND AND GRAVEL Co., Eugene, Ore., has been sold to E. B. Bishop, H. Bishop, and L. H. Williams. The new owners took over March 1. L. H. Williams will operate the business, and has announced that production will be increased considerably.

Quarry to Make Block

LORING QUARRIES, Bonner Springs, Kans., plans to open a concrete block plant about July 1, if equipment deliveries can be made in sufficient time.

Move Plant

STANDARD GRAVEL Co., Franklinton, La., is moving equipment to a new deposit about one mile south from its old operations. A new steel-hulled dredge will be placed in operation. It is expected the new plant will be in operation in June.

Import Alaska Limestone

ALUMINUM COMPANY OF AMERICA plans to bring high grade limestone from Alaska to the Portland-Vancouver area, according to C. S. Thayer, works manager of the Vancouver plant. Experiments also will be made with the use of low-grade Oregon laterite.

COMING CONVENTIONS

American Concrete Pipe Association, Annual Convention, Edgewater Beach Hotel, Chicago, Ill., April 11-13, 1946.

American Concrete Pipe Association, Board of Directors' Meeting, Edgewater Beach Hotel, Chicago, Ill., April 9, 1946.

American Society for Testing Materials. Annual Meeting, Buffalo, N. Y., June 24-28, 1946.

National Industrial Sand Association, Annual Meeting, The Homestead, Hot Springs, Va., May 15-16, 1946.

New Block Plants

HASTINGS CONCRETE PRODUCTS Co., Hastings, Nebr., recently started operations. Ed. C. Keast is the owner, and Don Koob is foreman.

R. O. BARBER, 50 Priory street, Guelph, Ont., Canada, is building a concrete block plant, equipped with a Besser Vibrapac. Located on the side of a hill, the plant will have gravity flow from the dumping in of aggregate to the finished block. The cost of the plant will be about $50,000. W. Struthers is sales manager, and H. Broeckel is foreman.

F. O. J. PETERSON, Minneapolis, Minn., will open a concrete products plant in Pine City, Minn.

REONDL CONCRETE PRODUCTS Co. and SOUTHEASTERN CONCRETE PRODUCTS Co. have received approval from the city council to build block plants in Columbia, S. C.

ARNOLD SNYDER and his father, John Snyder, are setting up a plant in Billings, Mont., to manufacture concrete blocks. A Miles Manufacturing Co. machine has been purchased.

THE DAKOTA LIME AND ROCK Co., Hill City, S. Dak., has started the construction of a new concrete products plant on its property north of the cement plant at Rapid City, according to L. R. Kennedy and Vernon L. Watkins, partners in the company.

BUILDERS CONCRETE PRODUCTS Co., Portland, Ore., has set up a plant in two temporary structures. F. I. Newman, manager, has announced that 20,000 concrete brick and tile will be made each day.

HEMENWAY CONCRETE PRODUCTS Co., Albert Lea, Minn., has announced the addition of a new concrete block machine with a capacity of 3600 per day. Two curing rooms also have been added.

C. H. BEAVERS, Monroe, Wash., plans to start a concrete block plant, and if machinery is delivered will have it in operation by April 1.

THE QUINCY BUILDING COMPANY, INC., Quincy, Wash., owned by Claude R. Remour and associates, is building a $20,000 plant to make concrete masonry units.

HOYLE BROTHERS, INC., Iron Mountain, Mich., is building a concrete block and ready mixed concrete plant just north of Champion, Inc., sand and gravel plant. Albert and Robert Hoyle are the owners.

COOK-PIERCE CONCRETE BLOCK Co., Fremont, Ohio, plans to start operations with an initial capacity of 2500 block per day. Forest M. Cook, one of the owners, is assistant sales manager of Stearns Manufacturing Co.

Leslie Pierce, the other owner, is assistant vice-president of the Adrian State Savings Bank, Adrian, Mich. Milvin Cook, father of the co-owner, will manage the company.

Gypsum Production Up

BUREAU OF MINES reports gypsum production, both mined and calcined, is steadily rising, but not adequate enough to meet demand. The figures on production in all classifications for 1945 as compared with 1944 are shown herewith:

Increased gypsum facilities are being installed in many parts of the country. The National Gypsum Co. is making a notable addition to east coast capacity by erecting a $2,500,000 board and plaster plant in Baltimore with rated capacity 25 percent greater than their Bronx plant. The installation will have six kettles. The Baltimore Port Development Commission is building pier and rock storage facilities for the plant, which will use gypsum imported from its mines at Walton, Dingwall, and Cheticamp, Nova Scotia. The firm's Savannah, Ga., board plant is being expanded 25 percent at a cost of $350,000, and the Portsmouth, N. H., board plant, shut down in 1944 owing to inability to import gypsum, is being reopened. Improvements are being made in the Niles, Ohio, metal lath plant, a new quarry is being opened at Fort Dodge, Ia., and $300,000 is being spent on the Rotan, Tex., plant. The company expects to increase its overall capacity by 25 percent, it is said.

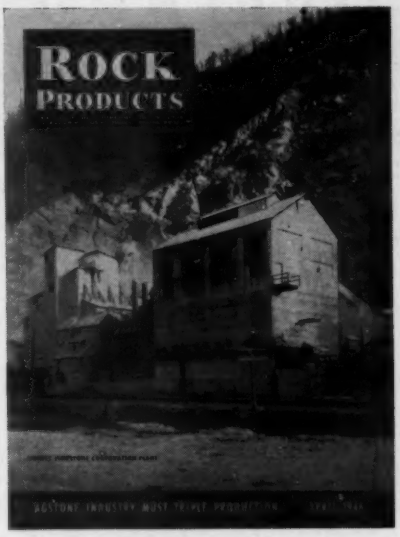
On the west coast the Kaiser interests are readying the wallboard plant at Long Beach, Calif., leased from Standard Gypsum Co., in 1944, and it is reported the plant will offer agricultural gypsum, wallboard, and lath by the middle of 1946. The firm has completed negotiations with the Mexican government for access to an estimated half-billion ton deposit of gypsum on San Marcus Island in the Gulf of Lower California. The plant was formerly leased and operated by Pacific Portland Cement Co. The latter firm is reported to have sold its Plaster City, Calif., plant to the United States Gypsum Co.

The Blue Diamond Corporation, Los Angeles, Calif., is augmenting its open pit production at Blue Diamond, Nev., by adding underground operations. The firm has ordered new grinding equipment and contemplates enlarging its entire gypsum operation. Sulfur Springs Gypsum Co. has opened a new mine at Thermopolis, Wyo., for gypsum fertilizer. Monterey Gypsum Co. has reopened a deposit near King City, Calif., which has been worked intermittently since 1898. The plant, which is producing agricultural gypsum, has a capacity of 200 tons per eight hours. The Arizona Gypsum Corporation, Phoenix, Ariz., is working a mine at Winkelman, Ariz., for fertilizer and other purposes. The Tovera Gypsum Co., Phoenix, Ariz., has begun production of agricultural gypsum. The Texas Cement Plaster Co. sold its assets, including its open pit gypsum quarry at Longworth, Texas, and its plaster and board plant at Hamlin, Texas, to the Celotex Corporation, Chicago, Ill.

GYPSUM AND GYPSUM PRODUCTS IN THE UNIED STATES, 1945

		1945 (Quantity)	1944 (Quantity)	Percent change from 1944
Crude gypsum:[1]				
Mined	Short tons	3,801,711	3,753,911	+1.
Imported[2]	do	505,717	341,853	+48.
Apparent supply	do	4,307,428	4,095,764	+5.
Calcined gypsum produced[3]	do	2,474,007	2,364,727	+5.
Gypsum products sold or used:[2]				
Uncalcined uses:				
Portland-cement retarder	do	659,544[4]	575,804[4]	+15.
Agricultural gypsum	do	461,862	469,986	—2.
Fillers and unclassified	do	19,204	14,240	+35.
Industrial uses:				
Plate-glass and terra cotta	do	20,197	25,360	—20.
Pottery plasters	do	30,599	31,970	—4.
Dental and orthopedic	do	13,994	12,371	+13.
Other industrial uses	do	135,588	130,816	+4.
Building uses:				
Plasters:				
Base-coat	do	640,933	520,715	+23.
Sanded	do	67,531	75,751	—11.
To mixing plants	do	10,878	19,034	—43.
Gauging and molding	do	88,559	78,088	+13.
Prepared finishes	do	6,994	6,108	+15.
Insulating and roof-deck	do	35,299	27,466	+29.
Other building plasters	do	15,551	13,661	+14.
Keene's cement	do	14,029	12,421	+13.
Lath	M sq. ft.	599,210	624,087	—4.
Wallboard	do	1,284,210	1,211,825	+6.
Sheathing	do	97,345	109,246	—11.
Laminated board[5]	do	119,177	175,133	—32.
Tile	do	18,637	14,879	+25.

[1] Excludes byproduct gypsum.
[2] Compiled from records of Bureau of Foreign and Domestic Commerce.
[3] Includes byproduct gypsum.
[4] Revised figure.
[5] Area of component board.



Plant and quarry of Liberty Limestone Corp., Buchanan, Va.

On the Cover

SHOWN on the cover of this issue is the dolomite quarry and processing plant of Liberty Limestone Corp. near Buchanan, Va. This operation is an important producer of agricultural limestone and has one of the highest quarry working faces in this country. Having an open face of 300 ft. to 400 ft. height closely adjacent to the plant is a complicating factor in operation.

When the plant was last described in ROCK PRODUCTS (August, 1941, pp. 29-31), the face was being worked directly back of the plant using 20-ft. benches, with jackhammer drilling. More recently, blast hole drills are being employed near the ends of the face in sinking primary drill holes almost 300 ft. in vertical height to the floor of the quarry. Capacity for agstone is considerable, of a product carrying a high percentage through 100-mesh.

Big Stripping Job

MARQUETTE CEMENT MANUFACTURING CO., recently let a contract to Markham & Brown to strip 250,000 cu. yd. of overburden east of the present Cape Girardeau, Mo., quarry. Overburden is reported to range from 30 to 55 ft.

To Enlarge Pipe Plant

COLUMBIA CONCRETE PIPE CO., Wenatchee, Wash., is planning to build a $90,000 addition to house a concrete block plant. Capacity will be 5000 block.

Adds Ready Mix

ROCK ISLAND LUMBER CO., Great Bend, Kans., has added a ready mixed concrete plant at a cost of about $50,000. Dean Miller, manager of the company, reports that two mixer trucks would be operated when the plant starts about May 1.

HINTS and HELPS

PRACTICAL IDEAS DEVELOPED BY OPERATING MEN

Removing Tramp Iron from Dredged Sand and Gravel

THE WARNER CO., Philadelphia, Penn., installed three suspended-type magnetic separators at the Van Sciver plant to remove tramp iron from

Installation of suspended-type magnetic separator over sand and gravel chute and in foreground pieces of metal which were removed by separator

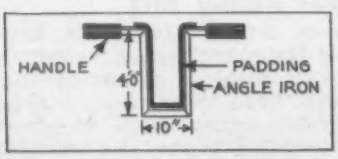
sand and gravel dredged from the river. As shown in the illustration, the results have been very satisfactory.

Two of the separators were placed above the chutes receiving the discharge from the main screens. Another was placed in the chute coming from the secondary elevator to the Allis-Chalmers No. 5 screen. As pointed out in *Warner News*, although small pieces of metal may not be harmful to equipment, occasionally heavy steel bolts come through which are sufficiently small to pass the scalping screen and are not seen by the man on the picker belt, but they are heavy enough to be very damaging to the disc recrushers.

Concentrating Table Carriers

By J. F. PRUYN

MOVEMENT of concentrating tables, necessary when it is time to re-riffle, has been made easier by use of home-made carriers. Shown in the sketch is a carrier constructed from an angle iron on which has been placed a padding of old belting. The protruding ends, which act as handles, are covered with old scrap rubber to make a more comfortable grip.



Carrier for moving concentrator tables

Removing Tough Overburden

PENNSYLVANIA-DIXIE CEMENT CORPORATION recently opened up a new quarry location near its Clinchfield, Ga., plant. Coffee Construction Co., Eastman, Ga., was given the contract to remove the overburden which varied in depth from 35 to 40 ft., and consisted of topsoil, clay, and "fuller's earth," involving about 150,000 cu. yd. of material.

In the accompanying illustrations are shown how this was done with four Tournapull-scraper units and a Le Tourneau dozer and rooter. The scraper units stripped topsoil and red clay first, often loading along the edge of a sheer 50- to 100-ft. bank. A layer of undesirable rock underlying the soil and clay was broken up with a rooter and dozed over the side, after which the tough, slick fuller's earth was ripped up and moved by the scrapers. Overburden was hauled 2000 ft. and wasted into a worked out pit.

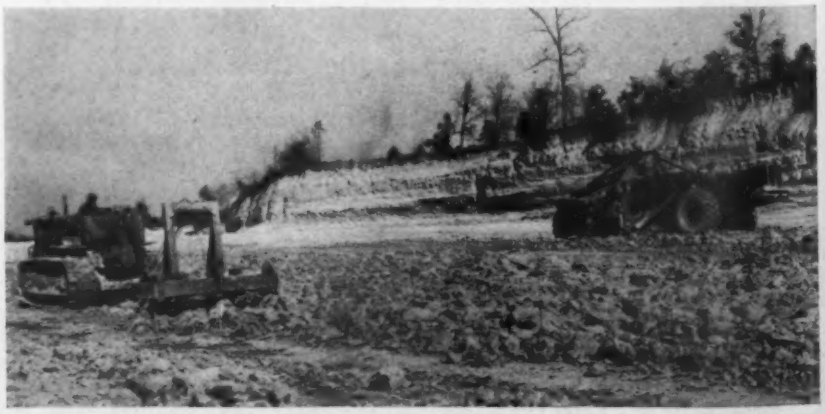
Baking Insulating Varnishes with Arc Welders

SOUTHWESTERN PORTLAND CEMENT CO., Osborn, Ohio, was confronted with the problem of baking insulating varnish applied to its turbo generator stators. Scheduled maintenance called for the removal of the generator rotor and thoroughly cleaning by washing the stator winding. After drying it was decided to apply an insulating varnish.

Oven baking was not practicable, but infra-red lamps and three Hobart 400-amp. electric arc welding machines were available. It was finally decided to heat the winding internally with direct current from the arc welding machines connected in parallel series, and to heat externally with a framework of twenty-four 375-watt infra-red lamps focused in each end of the windings.

The generator winding was connected in a two-parallel star and rated 940 amp. per terminal or 470 amp. per path. It is desirable to pass current through the entire winding

New limestone quarry face stripped of overburden. Scraper-loaders may be seen above, cleaning up, and below are the quarry cars moving up to the face for loading



To the right may be seen scraper-loader in action, and to the left is a tractor pulling a rooter to break up stiff clay for the scraper-loader

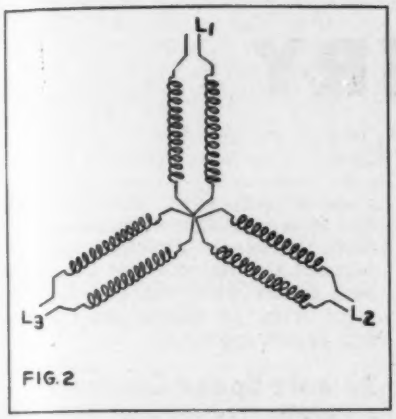


Fig. 2: Parallel star generator winding. Original connections provided cables brought to the outside of the machine from the ends of each circuit of each phase

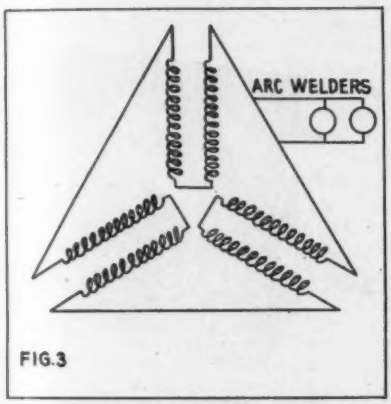
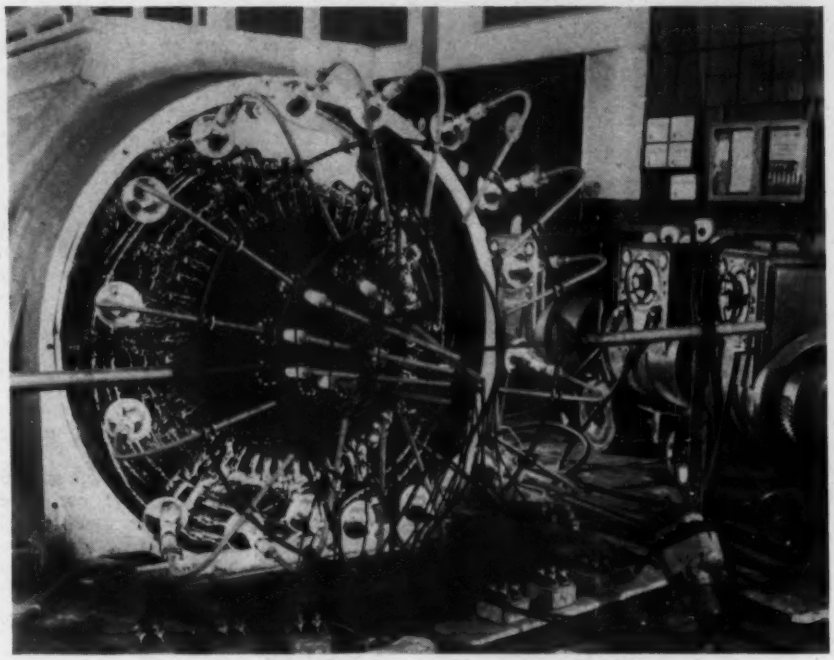


Fig. 3: Scheme of connections for placing the entire generator winding in series and for connecting to two paralleled arc welding machines

at one time, and since each path of the star-connected generator had a relatively low resistance, it was evident that as much of the winding as possible should be connected in series. This was accomplished by opening up the star points on the generator winding and connecting all paths in series as shown in Fig. 3.

With this scheme only two arc welders were used. The voltage was set at a low value and slowly increased, allowing ample time for the heat in the copper to be conducted to the outer surfaces of the coils where it could be measured by a thermometer. The current drawn through the generator winding was finally set at 15 volts and 420 amperes; and with the two banks of infra-red lamps at each end of the windings, a stable temperature of 250 deg. F. was reached and maintained for the required baking time of 12 hours per varnish treatment. A total of three varnish coatings were applied to the generator winding by flooding with an air syphon gun, each treatment being followed by a 12-hour bake.



Arrangement of infra-red lamps used at each end of the generator which, together with the arc welding machines, maintained a temperature of 250 deg. F for the 12-hour baking cycle

Rereeving a New Wire Rope

WHEN replacing an old and worn rope with a new one, on any machine which requires pulling the new rope through blocks, over sheaves and onto drums, the following method will prove to be a time- and money-saver.

Unlay and remove four of the six strands to a distance of about two or three feet from the end of the old rope. Similarly remove two of the six strands from the new rope to be installed. Splice, or lay, the two ends together and tape the ends to prevent unravelling. This will permit the new cable to be pulled through blocks and pulleys and reeved rapidly, accurately, and easily.

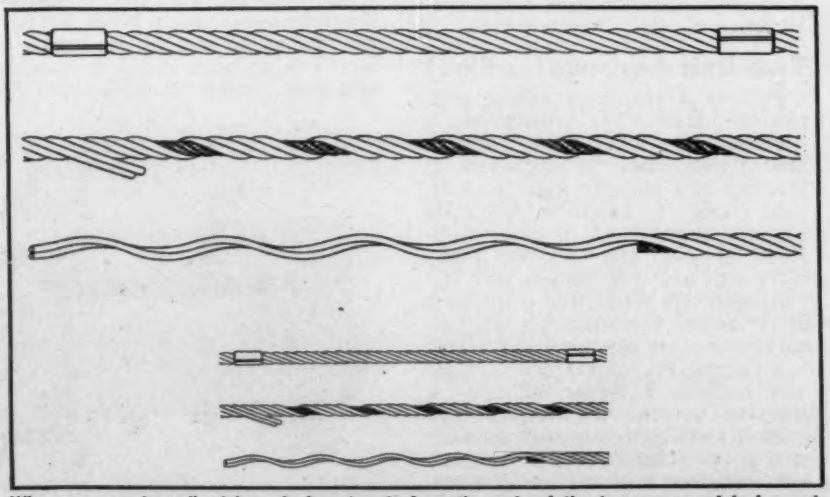
This can be done only with preformed wire rope, however, since it is only that type of wire rope which has strands which will lay inert. Attempting this procedure with non-preformed wire rope would cause the ordinary rope to virtually explode.

•

ERIE STONE Co., Huntington, Ind., has been reopened for repairs and distribution of stone already crushed. It is expected that crushing operations will be started in April. The company is owned by France Stone Co.

•

CURTIS GOODMAN has purchased the Bemidji Concrete Co., Bemidji, Minn., from his father, John Goodman. The company will be known as Goodman Concrete Products Co.

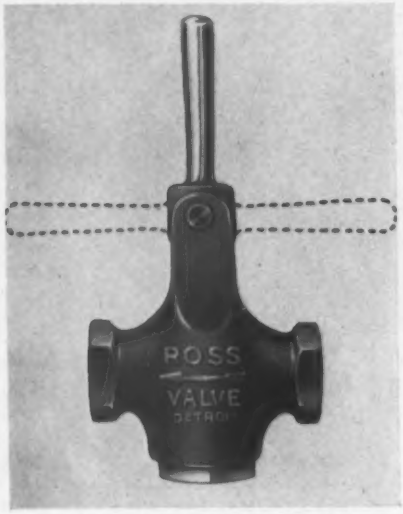


Wire rope can be spliced by unlaying strands from the ends of the two ropes and laying ends together to form union

MACHINERY

Shut-Off Valve

THE ROSS OPERATING VALVE CO., Detoit, Mich., has announced the addition of a shut-off valve to its line



Shut-off valve which locks automatically in both closed and open position

of poppet-type air-operated valves. Although this valve was primarily designed for use in air lines, it also is recommended by the company for use in gas and low pressure liquid lines. Five features claimed for this valve are: full flow, that is, full pipe area; quick-acting, just a flip of the lever opens or closes the valve; self-locking in both closed or open position; positive shut-off; and visual indicator, the position of shut-off lever indicating whether valve is closed or open. Four standard sizes are in production: ¼-, ⅜-, ½-, and ¾-in.

Two-Unit Aggregates Plant

PIONEER ENGINEERING WORKS, Minneapolis, Minn., has brought out a portable rock and gravel plant as one of its postwar developments. It is a two-unit plant of high capacity, light enough in weight to pass state highway limits. Two units are provided for each plant set-up; a primary unit and a secondary unit.

In each type setup, that is, for rock or for gravel, the secondary unit remains the same but the primary unit is different. For gravel, the primary unit includes a feeder conveyor, a scalping screen, a primary jaw crusher and a power unit, all mounted on a 3-axle truck. This is a complete, self-contained unit with mechanical feeder and shovel hopper. For rock, the primary unit includes an apron feeder, a primary jaw crusher and a power unit, all mounted on a 3-axle truck. Three options are available in the primary jaw crusher; namely, a 10- x 36-in., a 15- x 36-in., or a 20- x 36-in. size.

The secondary unit for both types of set-up includes a feeder conveyor, a 4- x 10-ft. vibrating screen, a 22- x 40-in. roll crusher, a return conveyor and a power unit, all mounted on a 3-axle truck.

Flexibility is provided in the gravel primary unit as a swivel conveyor can be added, and the mechanical feeder and hopper can be moved to the receiving end of the swivel conveyor.

Vibratory Screening Grizzlies

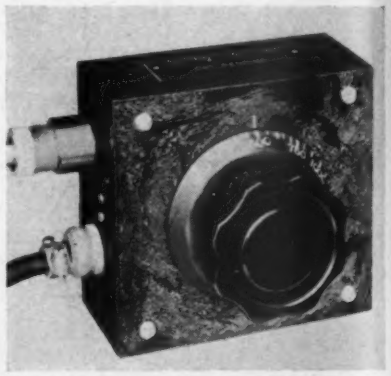
SYNTRON Co., Homer City, Penn., has developed a line of large capacity, heavy-duty screening-grizzly feeders. An important advantage claimed for its construction is the placing of the pulsating magnet forward and above the grizzly deck, the full length of the grizzly being utilized for material separation and discharge. The actual conveying or feeding is restricted to over-size material; the bulk of the fines are vibrated through at the rear of the trough upon introduction to the feeder.

Shown herewith is the model F-45 which has a conveying capacity of 200 tons per hour, but for separation purposes, this capacity must, of necessity, be cut down to meet the percentage of fines discharge required by the user.

The vibratory action of the feeder is said to be particularly adaptable to separation operations. While not perceptible to the eye, its movement or stroke is actually "upward, forward and back," momentarily leaving the material suspended, then repeating this movement 3600 times per minute. Some impact is therefore imparted between the material and the grizzly bars which, while slight, is of sufficient force to tumble the material and hasten separation.

Remote Speed Control

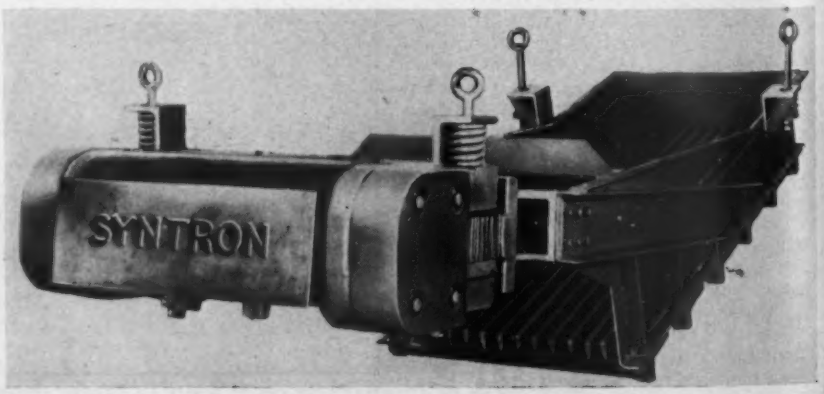
YARDENY LABORATORIES, INC., New York, N. Y., has developed a remote control for speed changers, known as Flectrol. As shown in the illustration, the dial can be set instantaneously to



Remote control for speed changers

any desired speed and the speed changer will follow as fast as the electric servo motor can drive the speed adjusting screw. It is said that exact speed setting is possible, and the control gives precise indication of the speed to the operator. The dial can be calibrated in r.p.m., feet per minute, gallons per hour, etc. Any speed within the range of the changer can be selected with an accuracy of better than two percent.

In operation, the device controls the rotation of the small motor used to adjust the pulleys or gears of the



Electro-magnetic vibrating feeder grizzly of large capacity

speed changer. Rotation of the speed selector dial causes this motor to drive the adjusting screw until the output speed of the controlled device corresponds to the speed selected on the dial.

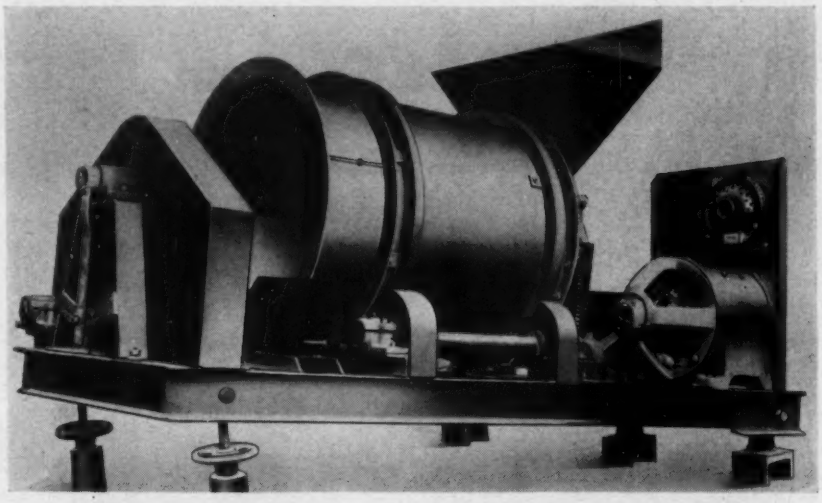
This remote speed control is available to all manufacturers and users of speed changing equipment, and also can be built in or added to motor operated valves, machine tools, and conveyors.

Equip Scraper Units with Larger Tires

R. G. LeTourneau, Inc., Peoria, Ill., announces that it is equipping all Tournapull-drawn LP Carryall scrapers with 21.00 x 24 tires. Heretofore this scraper unit carried 18.00 x 24 tires because scarcity of rubber and other wartime conditions prevented an earlier change to the larger size tire.

Use of the larger tire, it is claimed, has resulted in many added advantages. Maximum loads can be transported with lower pressure in the tires because, although the increased load capacity of the tires does not affect the gross load carried by the scraper unit, it does materially affect the performance in off-the-road operation. With lower pressure in the tires, "flotation" is increased and rolling resistance reduced, resulting in better and faster loading, hauling and spreading. Contact area of the new tire is 24 percent greater than the old; 373 sq. in. as compared to 300 sq. in., at rated pressures of 40 and 50 lbs., respectively.

The change to larger tires has increased scraper clearance approximately 40 in. over that obtained with the smaller tires. This additional clearance is advantageous in loading and spreading, for the increase in rolling radius plus the reduced pressure tends to buoy up the Carryall. Interchangeability between front and back tires is now possible as a similar tread is used for both traction and trailing purposes.



Pelletizer with surge hopper to the right, rotating drum, and feeder discharge

Segregating Pelletizer

Dwight & Lloyd Sintering Co., Inc., New York, N. Y., has placed on the market a segregating pelletizer which may have several applications in the industrial minerals industry. This equipment produces uniform pellets from very finely divided materials such as dusts, fumes, and flotation concentrates. It also is said to be suitable for the intimate mixing of ores with moisture, preparatory to sintering.

The pelletizer consists essentially of a feed hopper which serves as a surge bin, a feed regulator, rotating drum, screw feeder, scraper to remove flakes adhering to drum walls, moisture spray, crusher roller, and feeder discharge. The rotating drum has a speed range from 15 to 30 r.p.m.

Lathe Converter

Master Manufacturing Co., Hutchinson, Kans., has announced a new metal working unit, known as a lathe converter. It is a power driven attachment with interchangeable heads for lathes from 9-in. to 36-in. swing which permits milling, drilling, grinding and other operations on work pieces that have already been set up in the lathe for ordinary turning operations. Mounted on the tool post

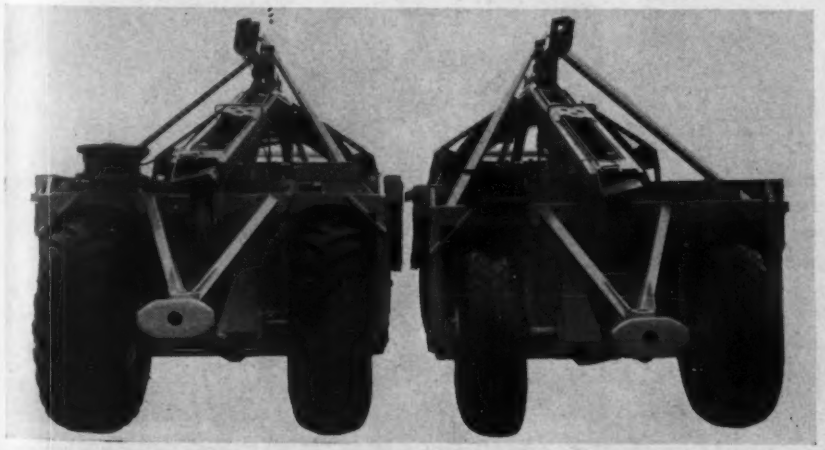
End-milling keyway on the taper axle using high-speed head on lathe converter

carriage, it serves as a power head and performs finishing operations that might otherwise require new setups on millers, borers, shaper, etc.

The lathe converter can be used as a stand-by repair unit which can be readily moved from one lathe to another as it is needed. While it is not intended for quantity production purposes, it is said that it can handle almost all production operations and it is well suited for maintenance and repair work.

Hydraulic Block Machine

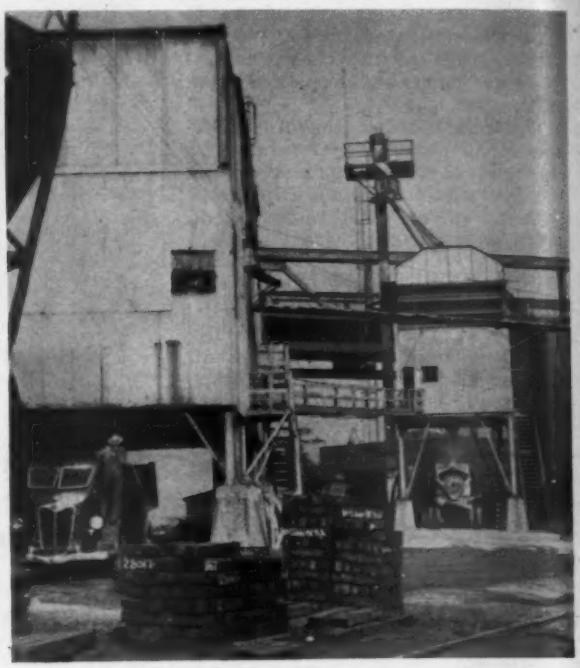
Bob Burns Machinery Corp., Fort Worth, Texas, is manufacturing an hydraulic block machine which produces from five to six units a minute. The machine is said to be no larger than a sewing machine.



To the left, scraper unit equipped with larger tires, and the right, scraper unit with smaller pre-war tires

Maintain Close Control On Moisture Content

McCrady-Rodgers Co., Pittsburgh, Penn., uses air-entraining and pozzolana cements in addition to regular portland



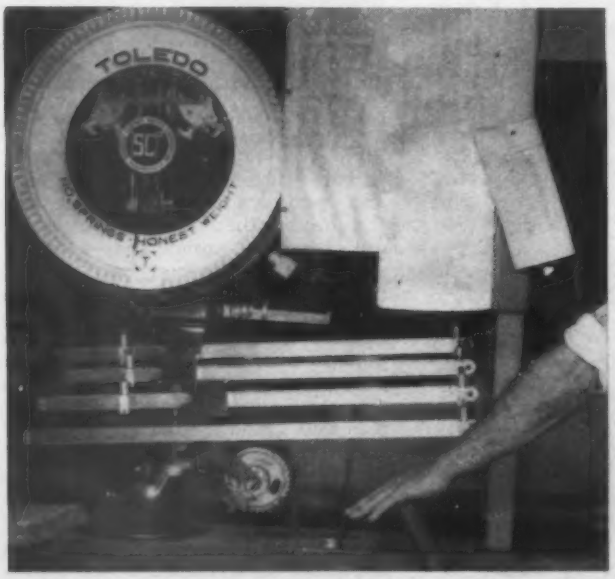
Aggregate batching unit in the left, background, and cement batching unit to the right with second story connecting walk between the two

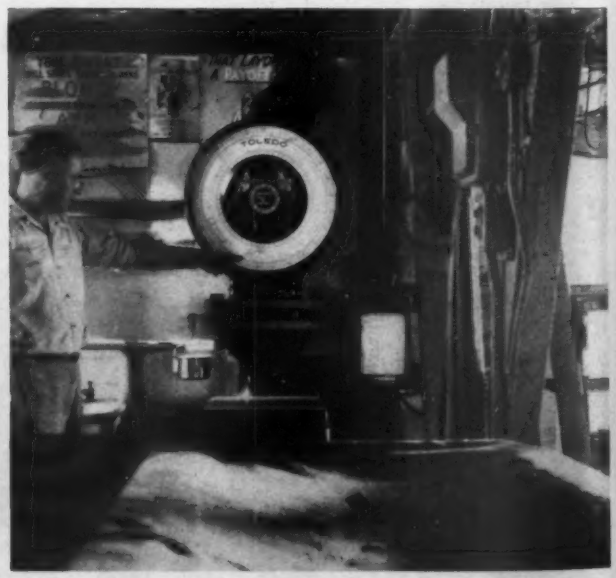
RIGID CONTROL over the water content of concrete mixes has been made possible at the Braddock and Pittsburgh, Penn., plants of McCrady-Rodgers Co., as the moisture content of all aggregates is determined by the batching operator accurately and quickly, just previous to use, as an integral part of the batching operations. Batches with as little as 1½-in. slump, have been duplicated consistently, an achievement difficult, if not impossible to attain, without individual batch moisture compensation. Automatic recording of all weighings completes the impression of scientific batching.

Moisture Control System

This moisture control scheme which is an integral part of Scientific Concrete Service Corp.'s batching plant is not only rapid, but requires no special laboratory technique to manipulate. Briefly the procedure, which requires only 30 seconds, is as follows: An aggregate sample of approximately 2 lb. taken by a thief or similar sampler in the bin above the batching floor, is weighed into a metal cup of known volume with a special Toledo dial scale. The size of the sample in the cup is adjusted until the scale pointer coincides with a reading representing the true specific gravity of the material in the cup. This figure remains more or less constant but can be determined on the same piece of equipment. The cup is now removed from the beam, some water added, and contents thoroughly shaken for a few seconds to insure thorough wetting of all particles, after which enough water is added to fill the cup. Reweighing indicates the moisture content of the original sample directly in percent. The proper size compensating poise is then hung to the beam of the aggregate batching scale, correcting for moisture content obviating any corrective calculations on the part of the batch operator.

McCrady-Rodgers produces all the aggregate from its dredging operation in the Ohio river. Seventy barges are in service between docks and dredge. A laboratory on the dredge makes size analyses of each individual bargeful. Average analyses represent-





Left: Aggregate batching scale. Right: Equipment for determining moisture. Operator is pointing to the answer in percentage of moisture indicated on scale. Recorders may be seen to the right

ing the tonnage brought in by a large number of barges is given below.

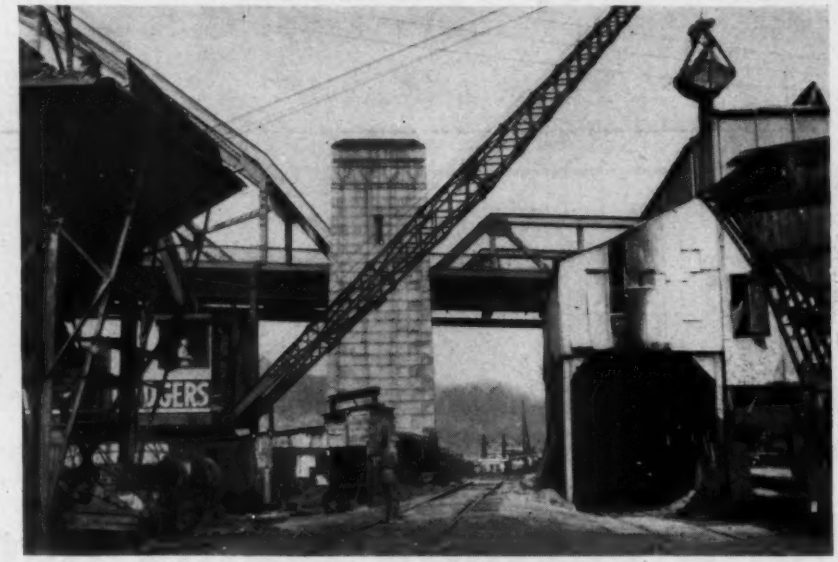
A swivel with an 85-ft. boom carrying a 2-cu. yd. Williams clamshell bucket transfers the barge contents direct to the bins located above the batching hoppers. The machine is operated by a 3-drum Lambert hoist powered by a 175-hp. hoisting engine and a 50-hp. swinging engine.

Ample Bin Capacity for Variety of Sizes

The Pittsburgh plant has three Blaw-Knox aggregate bins partitioned to stock various sizes as follows: bin No. 1—150-ton coarse sand and 100-ton fine sand compartments; bin No. 2—150-ton partitioned compartment for pea gravel and 1½-in. gravel, and 100-ton compartment for sand; bin No. 3—150-ton compartment for shot gravel and one of equal size for fine sand. The batchers are used for sand and gravel sales as well as for making ready mixed concrete, which accounts for the variety of size and large capacities.

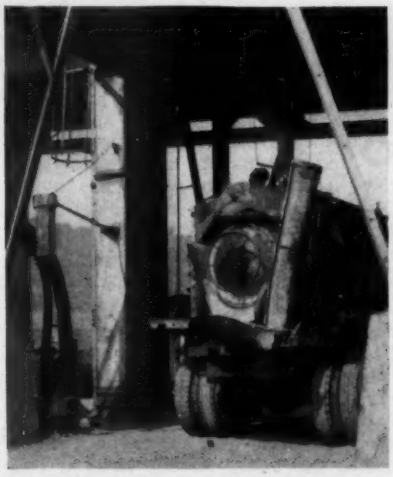
A three-compartment cement bin of 900-bbl. total capacity, regularly carries portland, air-entraining, and pozzolana cements because of the large volume demands for each. Bulk cement cars unload into a screw connecting with a 9-in. bucket elevator which discharges the cement into the proper bins by means of a dividing plate. According to William Rodgers, Jr., pozzolana is gaining favor with Pittsburgh area contractors because of ease of placement, and air-entraining cement is being specified for the finish surface on streets. Special cements, for which the demand is small and sporadic, are shipped in bags and brought up to the batching

(Continued on page 83)

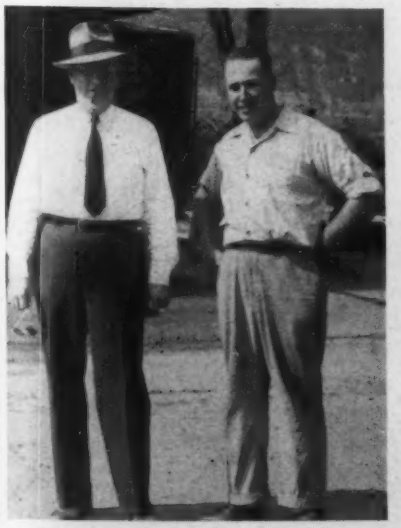


Clamshell loading aggregate bins. Barge dock (not in sight) is to the extreme left

FINE SAND		HIGHWAY SAND		1½-IN. GRAVEL	
Screen Openings	Percent Through	Screen Openings	Percent Through	Screen Openings	Percent Through
8-mesh	99-100	⅜-in.	100	1½-in.	100
16-mesh	85-94	4-mesh	95-100	1¼-in.	95-100
20-mesh	78-84	8-mesh	80-90	1-in.	90-95
50-mesh	6-18	16-mesh	55-80		
100-mesh	0.5-3.5	20-mesh	35-65	½-in.	20-50
		50-mesh	10-30		
		100-mesh	0.5-3.0	4-mesh	0-10



Charging mixer truck. Note retractable discharge to eliminate dust



William Rodgers, secretary of the company, to the left; and John Ugrinich, operator of the Ridge avenue ready mixed concrete plant

One of the seven 4-cu. yd. mixer trucks; with the fleet totalling 26 units

Overall view of plant: screen house and storage bins to the right, long setting box and waste launder to the lef, and impact crusher with return conveyor from scalping screen in the background

Long Settling Flume Recovers Fines

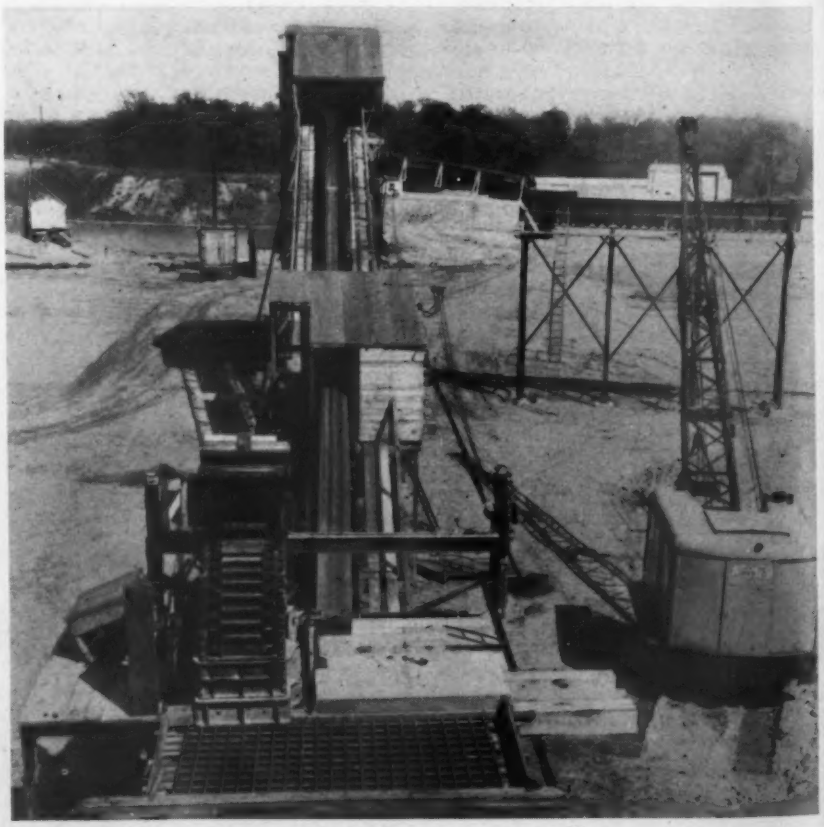
Northville Sand and Gravel Company produces 125 t.p.hr. of washed aggregates ranging from 1¼ in. to mason's sand

ONLY one crusher and two vibrating screens are used in the new dry pit gravel plant of the Northville Sand and Gravel Co., Northville, Mich., to produce 125 tons per hour of washed aggregates ranging from 1¼-in. to masons' sand.

Four Lorain No. 75A gas shovels equipped with ¾-cu. yd. clamshells handle the loading from gravel bank to hopper, the stockpiling and recovery from stockpiles. At present the bank is so close as to permit the same shovel to feed the hopper which mines the bank. As the bank is cut farther back trucks will be used to bring the shovel diggings to the hopper.

A grate with 6-in. bar spacings scalps off the few large boulders, which are removed by one man. A 24-in. Pioneer conveyor belt, 70-ft. centers, feeds the gravel to a 3- x 6-ft. single-deck Simplicity vibrating screen having 1¼-in. cloth openings. Oversize is returned to a No. 3 Kubit impact crusher via inclined belt, the crushings again joining the feed from the hopper to repass over the 3- x 6-ft. vibrating screen. The circuit is thus a closed one permitting only material under 1¼ in. in size to pass on for further processing.

Screen undersize is carried into the screening house via 24-in. Pioneer inclined belt conveyor, 100 ft. centers, where the coarser stock sizes are separated and discharged into storage bins. A 4- x 8-ft., 3-deck, Diester vibrating screen with top-, middle-, and bottom-deck cloth openings of ¾-in., 7/16-in., and 5/32-in., respectively, separates three washed sizes, viz., 1¼ x ¾ in., ¾ x 7/16 in., and 7/16 x 5/32 in. Three 60-ton bins gravity load to trucks on opposite sides of the building. A 4-in. centrifugal pump supplies up to 1100 g.p.m. to the upper deck of the screen applied as a spray.



View looking up to top of screening plant. Impact crusher and grizzly may be seen in foreground Quarry cars are dumped to hopper at left for delivery to crusher or to hopper at right

The slurry of fine sand and water passing the lower deck cloth, and containing sands from 5/32 in. down, is fed to a special settling box or flume. This was described in detail in the October, 1945, issue of ROCK PRODUCTS, under Hints and Helps. The large settling area of this box, which is 36 ft. long x 36 in. wide at the stream surface, suddenly reduces the velocity of the slurry flow of the incoming launder, thus permitting hindered settling to operate immediately in precipitating the coarsest sizes. As the stream's velocity decreases still further with progress down the flume, the finer particles settle out, until at the discharge end the effluent carries in it only the extreme fines. Fifty-four bottom discharge valves in pairs equally spaced throughout the length of the box discharge the precipitated sands to the yard floor below for draining and air drying. More than 500 tons can be allowed to accumulate before secondary stockpiling with power shovel becomes necessary.

The sands collected near the head of the box grade as torpedo size, gradually becoming finer until at the discharge end they grade as masonry sands. The ratio of production of torpedo to masons' sand is about 4:1.

A 700-ft. long wooden launder with a fall of ⅛ in. per foot carries the tailings to a settling pond remote from current pit operations.

John Waskin is superintendent and part owner of this plant which serves Detroit concrete block and ready mixed concrete plants.

Controlling Moisture

(Continued from page 77)

floor by means of a special elevator adjacent to the railroad siding.

Each of the three aggregate bins is equipped with a 5-ton, 4-beam Toledo scale having seven poises making for 20-lb. weight increments. The cement scale is a 1½-ton, 3-beam, 10-lb. increment Toledo scale.

Each scale is electrically connected with individual Esterline-Angus graphic recorders which make permanent records of each weighing, as well as time of day and date. This not only has value as protection for both producer and consumer, but the latter for instance can ask for an exact duplicate of an old mix, and get it.

McCrady-Rodgers Co. operates one other ready mixed concrete plant besides the two mentioned; namely that at Verona, Penn. The mixer fleet servicing these plants includes seven 4-cu. yd., sixteen 3½-cu. yd., and three 2-cu. yd. Jaeger and Blaw-Knox mixers mounted on Autocar and Diamond T trucks. The 4-cu. yd. models are all 3-axle design.

The company is owned by the families of McCrady and Rodgers. William Rodgers, Jr., is secretary of the company as well as superintendent of the Pittsburgh ready mixed concrete plant, and of the barge repair docks.

Industrial Sand Directors Discuss Wage-Price Policy

THE BOARD OF DIRECTORS of the National Industrial Sand Association held a special meeting in Chicago, Ill., March 12, for the express purpose of exploring the meaning of the "wage-price policy" recently announced by the Federal Government. Executive Secretary Vincent P. Ahearn, N.I.S.A., and William L. Pringle, Building Materials Price Branch, O.P.A., both did a lot of explaining; but the general impression seemed to be a considerable doubt if there is such a thing as a "government wage-price policy." It is open to question if much of the confusion already existing in the minds of employers was dispelled, but a few points were apparently cleared up.

The principal feature of the "new" as compared with the "old" policy is that it recognizes the inevitability of price increases all along the line, and it recognizes the need of prompt adjustments. The previous policy was for price adjustments only in "hardship" cases created by wage increases *after six months' operation* under the higher wages.

Now, after March 15, if the producer intends to use an increase in wages as an argument for a price increase, he must first get approval of the wage increase from the Wage Stabilization Board. The producer can sign a new labor contract and therein promise to pay a wage increase but only if it is allowed by the Wage Stabilization Board, which is supposed to be governed in its decision by the rules laid down in the new Executive Order. If the wage increase is allowed, it is back-dated to the signing of the contract.

It is necessary therefore, if a wage increase is being applied for, to notify the O.P.A. to that effect, together with an estimate of what the added cost will be. Not until the wage increase is granted, however, can the O.P.A. decide whether or not the producer is a "hardship" case. The definition of "hardship cases" is a severe one. An industry is considered to be in hardship only if, after wage increases, ceiling prices leave its earnings insufficient in the judgment of the Price Administrator to yield during the next twelve months an average rate of return on net worth equal to that earned in 1936-39. This allowable return is calculated before taxes, although the corporate tax rate in 1946 is 38 percent, against only 17 percent on the average in 1936-39.

Price relief can be applied for by an industry as a whole, by a geographical group of producers within the industry, or by an individual producer. Since the anti-trust laws can not be suspended by the O.P.A., most wise producers are chary about applying for price relief as a group, for fear the Attorney General's Department may be acquiring data for subsequent suits.

The sum and substance of an all-day discussion seems to have been that while the Government has made it much easier to increase wages, it has done very little to help producers meet such increased wages. While insisting that the producer is entitled to a fair profit, based on the 1936-39 base period, the Government personnel obviously believes that the bulk of increased wages can come out of increased profits.

Present were T. C. Matthews, Lewistown, Penn., presiding, and Hamilton Allport, Chicago, Ill.; J. H. Buchanan, Youngstown, Ohio; J. S. Coxy, Youngstown, Ohio; R. J. Cronemueth, Detroit, Mich.; E. M. Durstine, Columbus, Ohio; A. H. Fanzer, Brooklyn, N. Y.; Sterling Farmer, Cleveland, Ohio; A. Y. Gregory, New York City; C. W. Hardy, Evansville, Ind.; R. G. Hay, Zanesville, Ohio; C. M. Helmick, Columbus, Ohio; L. T. Manley, Rockton, Ill.; Percy Palmer, Browntown, Wis.; E. O. Schneider, Ottawa, Ill.; J. M. Strouss, Morgantown, W. Va.; Geo. A. Thornton, Ottawa, Ill.; C. R. Wolf, Millville, N. J.; W. J. Woods, Lewistown, Penn.; V. P. Ahearn, Washington, D. C.; Stanton Walker, Washington, D. C.; and Nathan C. Rockwood, Chicago, Ill.

Illinois Agstone

ILLINOIS State Geographical Survey preliminary annual report shows that 4,210,000 tons of agricultural liming materials were used for soil improvement in Illinois in 1944, an increase of 31 percent over the 1943 level, establishing an all-time high record. Increased production kept up with the greater demand, supplying 92.5 percent of the liming material used in the state. Production in 1944 amounted to 2,500,261 tons of limestone, 1,561,956 tons of dolomite, and 10,832 tons of marl valued at $2,709,514, $1,546,597, and $10,596, respectively, to make a total production in Illinois of 4,073,049 as compared with 3,130,939 for 1943. Of this 1944 production, 173,211 tons were marketed in other states, while 314,762 tons were produced in other states and marketed in Illinois.

This increase in production was due mainly to the increased efforts of the larger producers, 19 out of 25 selling over 50,000 tons reporting a considerable increase in sales, while 70 to 90 smaller plants producing less than 50,000 tons reporting smaller increases. Production in the state came from 48 of the 102 Illinois counties.

AGRICULTURAL LIMESTONE

A Fifty Million Ton Market

By BROR NORDBERG

Agricultural Limestone Division sets up big promotion campaign to develop agstone market

THE AGRICULTURAL LIMESTONE DIVISION of the National Crushed Stone Association has almost completed its first year of existence, and has made fine progress toward forwarding the interests of its membership. Its membership numbers 146 producers and 24 associates at this time, representing some 50 percent of the annual national tonnage, and is in the process of rapid expansion.

Believing that the Division operates on a sound philosophy, it is our purpose herein to review its accomplishments after one year and to point out what it proposes to do which, we believe, is representative of what the industry requires. In devoting this article to the Agricultural Limestone Division, full recognition is given to the fact that other organizations of producers and other interested groups and agencies also are effectively contributing to the overall objectives—to increase business for individual producers and support the soil conservation program for the benefit of the nation.

While the Agricultural Limestone Division is set up to perform all the functions of an aggressive trade association, its accomplishments the past year in the field of sales promotion and its expressed purpose to increase efforts in that direction are outstanding. The Division has a philosophy built upon the realization that the long-range future for the industry and its development, and the very welfare of the nation depends upon soil conservation and more of it. Creation of a desire on the part of the farmer to properly lime his soil is the specific objective.

This philosophy dovetails with that of the federal government as expressed by Guy W. Smith of the Production and Management Administration, U. S. Department of Agriculture, elsewhere in this issue, who looks forward to the day when the farmer has become sufficiently educated in soil conservation practices that liming may be handled on a business transaction basis.

The Division has set out to supplement the very excellent work of the government in stimulating the liming of our farms, recognizing that from year to year the farmer must make increasingly larger payments out of pocket. This year he must pay 20 or 30 percent of the cost for liming his soil, under the government program, necessitating that all interested groups hammer away through educational promotion so that the farmer will want to assume increasingly greater cost, because he knows his investment is paying dividends. There is still a big gap between the record volume of 23 million tons of agricultural limestone spread in 1944 and the 50 million tons minimum required to maintain soil fertility.

Already the Division has made substantial progress in sales promotion activity and has immediate plans for expansion of the program in many directions to supplement the efforts of our tax-supported institutions. Being an organization of producers who have a common goal, the Division is capitalizing on the talents of merchandisers within the industry in the preparation of promotion pieces, giving to its membership, both small and large, the benefits of the merchandising experience of leaders in that field. Printed pieces such as the one reproduced herewith are available to individual producers at something like half the normal cost he would have to pay as an individual, due to the economies of mass reproduction.

The first printed promotion piece, entitled "Repair and Rebuild with Limestone and Legumes," an attractive, well-illustrated folder, is packed with data comparing the productive output of limed and unlimed plots of land and shows how and to what extent a farmer may profit through liming his farm. Almost 200,000 of these folders, which have a blank page for member company imprint, have been ordered thus far.

The scientific paper, "Mobilizing the Fertilizer Resources of our Soils," presented before the 1945 annual convention of the National Crushed Stone Association by Dr. William A. Albrecht, chairman, Department of Soils, College of Agriculture, University of Missouri, has been reprinted. Persistent efforts by the Division have resulted in the article, "There's Cash in Conservation," being published in the February, 1946, issue of *Farm Journal*. More articles of this nature and an increasing flow of promotion pieces are immediate and continuing objectives.

Other merchandising tools to be prepared by the Division include posters for banks, a plan for closer cooperation between the industry and agricultural agents, a series of authoritative folders, films, invisible ink postcards with appropriate messages and other means to reach every farming community in the United States. The future generation of farmers—the children—are not to be overlooked in the overall plan.

One of the major activities of the Division is in connection with and in support of the Federal Reserve Banks in a movement to have local banks loan farmers money for the purchase and spreading of liming materials. Substantial progress has been made in that direction. The movement had started with the Federal Reserve Bank of Cleveland, recognizing that the benefits from liming the soil do not yield immediate return to the farmer. Loans are made on a 5-year basis by local banks to assist the farmer in purchase of his requirements.

Other banks in the Federal Reserve System have been contacted by the Division and several have indicated interest in the plan. The Federal Reserve Bank of Boston has requested the Agricultural Limestone Division to prepare a series of appropriate advertisements to be submitted to local banks under its jurisdiction for use in their local newspapers.

We might add here that the officers and Board of Directors, being intensely sales-minded, pledged the money by individual subscription at the annual Board meeting in Cincinnati, February, 1946, to finance these advertisements, which are to be prepared by an advertising agency.

The foregoing activities are emphasized for they represent a healthy, long-range viewpoint by an organized group of producers who believe in

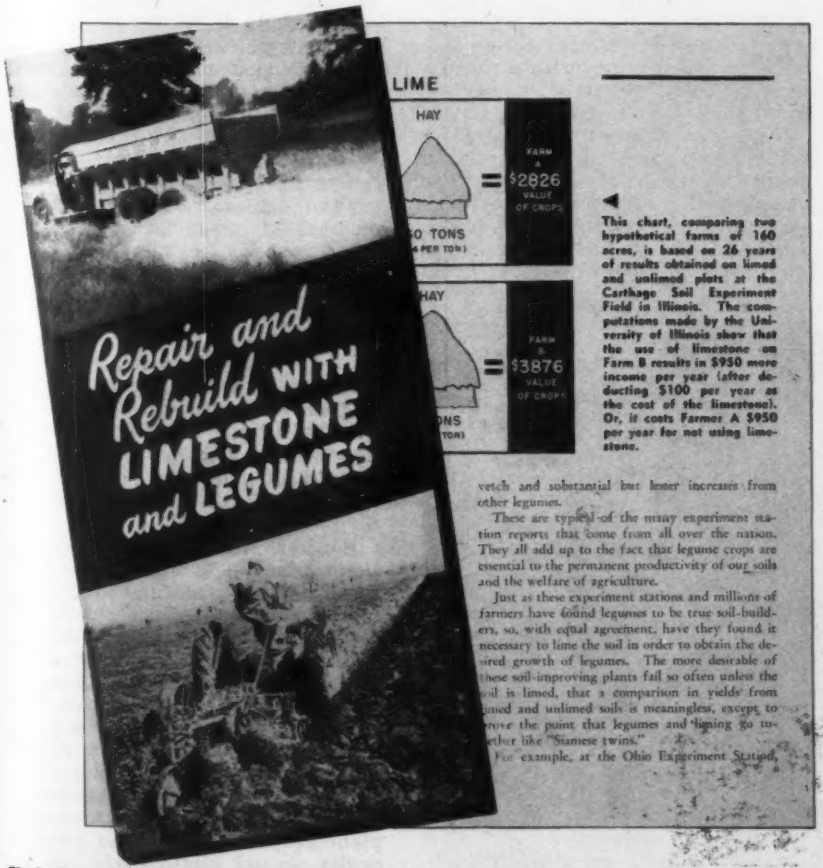
fortifying the industry by building business by cash purchases to supplement that created by government effort and at the taxpayers' expense.

Sales promotion is but one phase of the Division's program; the main purpose of its organization being to perform the various functions of a trade association to give individual members the benefits of organized effort where needed. The Division maintains its headquarters at the National Crushed Stone Association offices in Washington, D. C., and keeps in close touch with government agencies on industry problems. Matters concerned with federal legislation, priorities, labor problems, etc., are interpreted for the membership through industry letters. Much of the work of the managing director is in the field cooperating with other interested organizations and agencies in the promotion of agricultural limestone, with the banks, and in close harmony with State agricultural limestone association. State organizations are encouraged by the Division. Dues are assessed on the basis of tonnage.

Henry A. Huschke, managing director, is responsible for carrying out the program along the course charted. Mr. Huschke, a graduate of Cornell

S. P. Moore

University, College of Agriculture, previously had been in charge of the agricultural department of the National Lime Association for 12 years and had served with the O.P.A. on the pricing of liming materials and fertilizers for over three years. J. R. Boyd, administrative director of the National Crushed Stone Association, is secretary of the Division.



First of a series of mailing folders prepared by the Agricultural Limestone Division, N. C. S. A., promoting the use of agstone

New Chairman

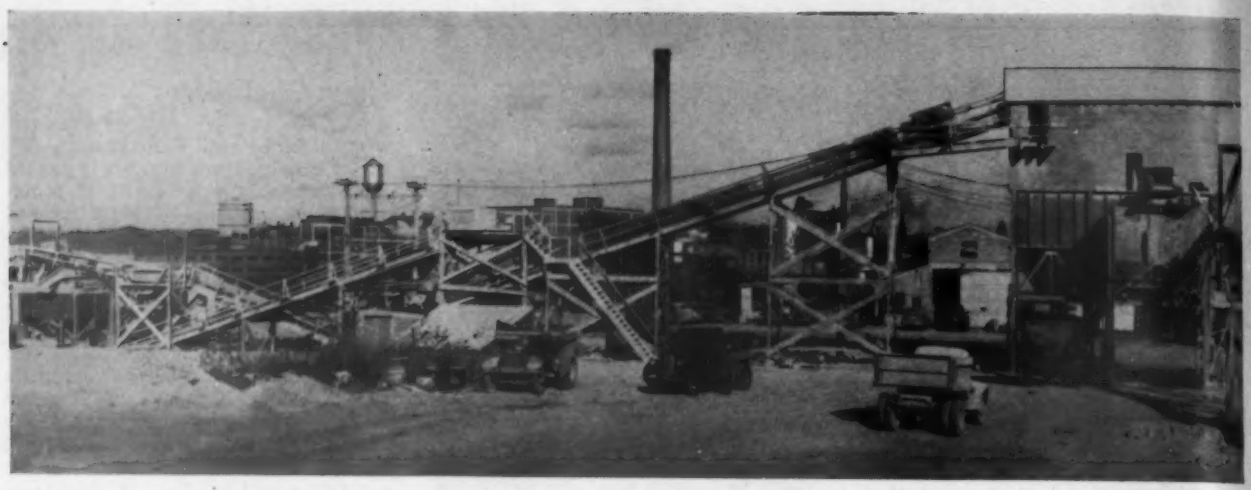
S. P. Moore, president of Concrete Materials and Construction Co., Cedar Rapids, Iowa, and newly elected chairman of the Agricultural Limestone Division of the National Crushed Stone Association, has spent practically his entire business career in the sale, production, and distribution of building and construction materials.

He is a native of the Tall Corn State and proud of it. Born in a small town about 50 miles from Cedar Rapids, he gained most of his education in the school of hard knocks. His first job was with a grain elevator and lumber yard. Later, he became a cement salesman with Hawkeye Portland Cement Co., Des Moines, Iowa, now part of the Marquette Cement Manufacturing Co.

Mr. Moore decided to go into business for himself and opened a building supply business in Cedar Rapids. Finding it difficult to secure an adequate supply of aggregates, he purchased two small quarries. The business grew rapidly, and the company branched out into other activities. The first ready mixed concrete plant in Cedar Rapids was built by Mr. Moore. The building supply business was sold as Mr. Moore decided to concentrate on the production of aggregates.

Ten years ago, Mr. Moore joined with H. D. Bellamy, who was in the sand and gravel business, to form a partnership which continues today. Later the company engaged in the contracting business, constructing highways in Iowa and neighboring States. The activities of this company have even extended to South America. Aggregates and concrete were supplied to build four dams to impound water for the city of Caracas, Venezuela.

It is in the agricultural limestone business in Iowa, however, where Mr. Moore's company pioneered with other far-sighted producers. The gospel of soil liming was brought to the farmers throughout the State in tents set up at county fairs and other gatherings. Coffee was served to bring in the people where the advantages of liming were promoted through literature and other means. The company has cooperated with State and federal officials in this promotional program. Legislation was advanced in Iowa in the 30's to authorize County Boards of Supervisors to solicit proposals from contracting producers to make agricultural limestone available to farmers who did not have ready cash. The limestone was sold on warrants which had priority over all the farmer's obligations except taxes. This legislation is still on the books, but of course is now superseded by the federal distribution plan now in effect.



Overall view of Otis crushed stone plant. To the right may be seen spreader truck below bins. Crushing units are located in the center.

Move Plants Closer to Markets

Concrete Materials and Construction Co., Cedar Rapids, Iowa, produces million tons of agstone in twelve plants

By RALPH S. TORGERSON

TO MEET the increasing demand for agricultural limestone, Concrete Materials and Construction Co., Cedar Rapids, Iowa, recently stepped up pulverizing capacity at its Otis quarry on the outskirts of the city. This is not in itself significant as this company has been constantly expanding its facilities for the production of agstone and construction materials, but the methods and equipment employed are somewhat unusual and the operations at Otis quarry are therefore described as typical.

This company has pioneered in the production of agricultural limestone, and is today one of the largest producers in the country with a production of over 1,000,000 tons in all of its strategically located plants. Of 14 plants operated by the company, 12 are crushed stone and two are sand plants. Seven of the crushed stone plants are semi-permanent in character while the others are portable. However, the so-called permanent plants are so set up that they could be taken down in a comparatively short time and reassembled at a new location.

Close-up of Diesel motor driving pulverizer with V-belt drive. To the right may be seen spreader truck loading from one of the bins

As President S. P. Moore explained, this policy of installing semi-permanent and portable plants was determined by several considerations. Compared with the more populous Eastern States, Iowa and other western states in which the company has been active have very few large metropolitan centers, and only a small number of permanent type plants could be economically justified by local markets surrounding these cities. It is generally more economical therefore to bring the plant to the source of aggregate materials near the job than to transport materials over a long haul from a permanent plant. In some cases the cost of getting out materials with portable plants is greater than with a comparative permanent set-up, but the short haul has more than compensated for the higher portable plant costs.

Concrete Materials and Construction Co., also is in the road construction contracting business, and therefore has had a considerable opportunity to make a study of costs of producing and transporting aggregates to the job. The same elements of cost also apply to the agstone business. Where the company has a contract to supply a more or less definite tonnage of agstone, a quarry is opened by the company at a suitable deposit meeting specifications and a portable plant produces the desired tonnage. Scales are set up to weigh out the stockpiled material supplied to contract haulers, a scaleman is left in

charge, and the plant moves on to a new location. The portable plant is kept busy and is enabled to supply a wider area in a market, which, according to the Department of Agriculture and State authorities, will take many years to satisfy essential needs.

Otis Plant and Quarry

The Otis plant at Cedar Rapids may be considered typical of the semi-permanent plants operated by the company although quarry characteristics may differ at the other plants.

Overburden probably averages about 60 ft., which is somewhat unusual, and the quarry face is 60 ft. Under this burden is 20 to 22 ft. of soft limestone, satisfactory for driveways and agstone but not for construction materials. Below this strata is 28 ft. of good hard limestone, known locally as Otis stone, testing 94 percent $CaCO_3$, which makes a very desirable road stone and meets State specifications for concrete aggregates. This is followed by 12 to 14 ft. of a softer limestone, suitable for agstone.

This heavy overburden involves considerable stripping expense, using LeTourneau scraper loaders and Caterpillar tractors. Mining methods were given consideration, but the strata of hard rock was not sufficiently thick and would have involved wasting considerable rock by room and pillar methods.

Drilling and Blasting

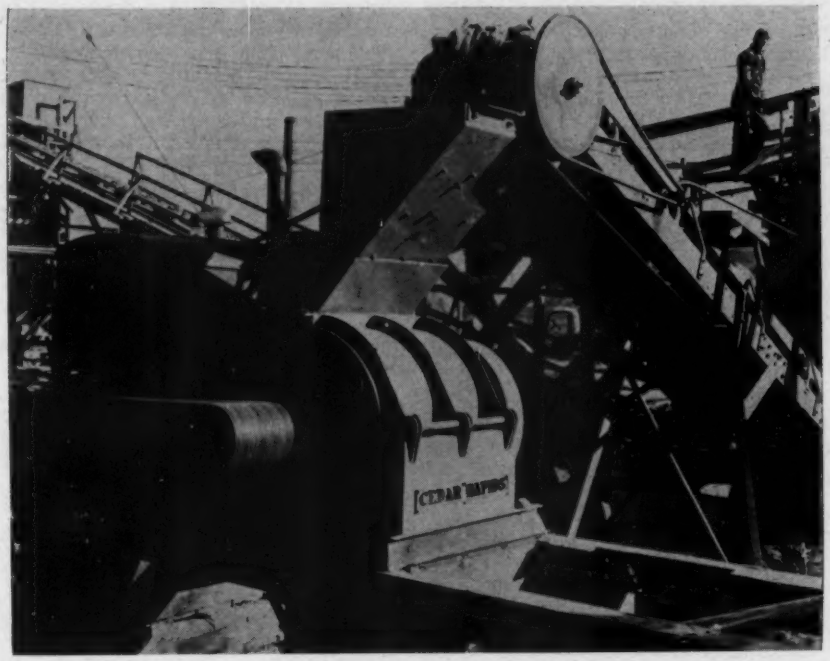
Blasting is done in three lifts corresponding to the three different strata of 20 ft., 28 ft., and 12 ft., previously mentioned. Drilling is done with well drills.

As the quarry is within the corporate limits, only two holes are shot at the same time, using 50 lbs. of dynamite per hole. As a result of careful blasting, the company has operated for years with no serious or justifiable complaints. To give further assurance to city officials and the public, the company has voluntarily posted with the city a $25,000 bond against any claim for damage.

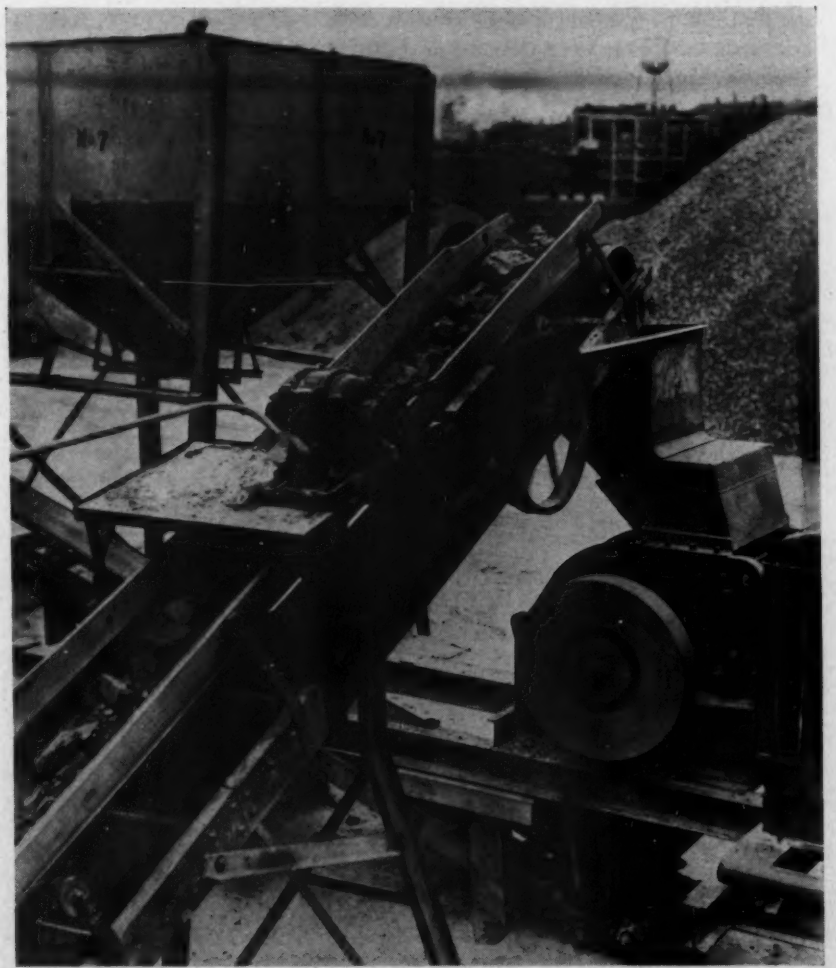
Secondary blasting is done by shooting large blocks of stone with electric blasting caps similar to primary blasting practice. Several blocks of stone are shot simultaneously to eliminate repetitive blasting. Complete records have been kept by the superintendent over a period of years, covering location, time and number of shots of each blast. This practice has proved very useful in pointing out to any complainant that the disturbance reported could not have been caused by the company's blasting.

Plant Flow Sheet

Material brought down at the quarry face is loaded by a 1½-cu. yd.



Agricultural limestone pulverizing unit. Note hopper arrangement for feeding hammermill



Fly-wheel side of pulverizer, showing size of rock fed to hammermill and conveyor, below, inclining up to agricultural limestone storage bin

Northwest shovel into a 6-cu. yd. Koehring Dumptors (five at this plant) which transports it to the plant. The Dumptors move up a slight ramp to discharge into a 10-ton hopper with a 42-in. by 8-ft. feeder feeding an Iowa 25-40 primary jaw crusher with a capacity of 150 to 200 tons per hour.

Throughs from the crusher move up an inclined belt conveyor, 70-ft. centers, to a 35-ton surge bin. From the surge bin, material is fed with an apron feeder to the new 3033 Iowa Manufacturing Co. hammer mill, which will be described in more detail later in the article.

Another apron feeder moves material from the surge bin into a No. 40 Williams slugger mill, throughs going by bucket elevator, 28-ft. centers to a 30-ton truck delivery bin.

A third apron feeder under the surge bin discharges material onto an inclined belt conveyor which carries it up to a 3- x 8-ft. double-deck Simplicity vibrating screen. The top deck has a 3-in. mesh screen. All material retained on the 3-in. mesh goes to a 10- x 36-in. Iowa jaw crusher. Material passing the 3-in. mesh and retained on the bottom deck goes to a 20- x 40-in. Iowa roll crusher. Material passing the second deck moves by belt conveyor, 90-ft. centers, to a 4- x 12-ft. double-deck Iowa vibrating screen, which is mounted over a three-compartment bin, with a total capacity of 120 tons, for separation into various sizes.

If washed material, either coarse or fines, is desired, it can be sent by chute to a double-screw Eagle washer. Adjoining this 120-ton compartment bin is a 35-ton bin over which is mounted a 3- x 8-ft. double-deck Symons screen. This screen is equipped with spray pipes for washing, and provides two gradations of washed material.

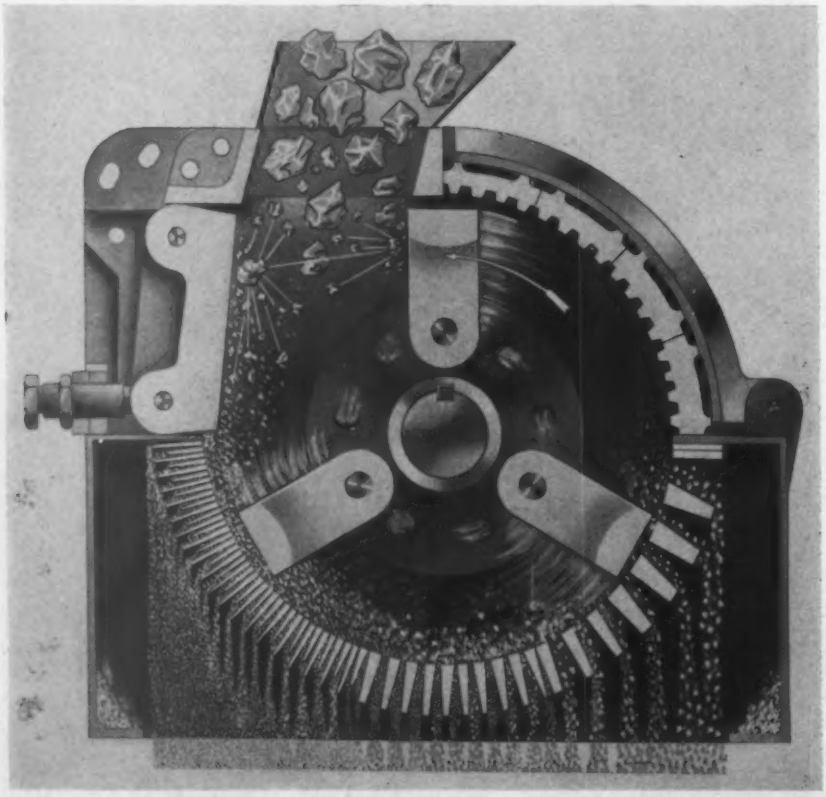
Both bins have hinged short conveyor belt extensions below for loading railroad cars. Trucks may also be loaded from these bins as driveways are located below. A ¾-cu. yd. Moore Speed shovel mounted on solid rubber tread wheels is used to stockpile material and load from stockpiles.

The plant is operated throughout by 220-volt electric motors, except the new Iowa hammer mill. Current supplied at 33,000 volts a.c. is dropped to 220 volts by two banks of transformers. The first transformer step is to 2300 volts a.c., and then to another bank of transformers to 220 volts.

New Pulverizer

The new 3033 Iowa Manufacturing Co. pulverizer is driven by an M-E 6 Murphy Diesel rated at 165 hp. on intermediate load and 130 to 135 hp., under continuous operation. A V-belt drive is used. As now set up, the pulverizer produces 40 tons an hour, 97 percent through No. 8 mesh, and the mill turns at 1200 r.p.m. If coarser materials were to be made, the speed may be reduced to 750 r.p.m., and the grate openings increased.

This new pulverizer has several interesting features for which certain advantages are claimed. It has an all-welded, steel fabricated construction to reduce weight to a minimum. The reversible breaker plate is a one-piece manganese casting, easily adjustable and held in position through two through rods. The angle of the breaker plate is almost vertical to give maximum impact action. Rock rebounding from the initial impact goes right back into the hammers instead of bouncing up out of the feed opening. Grates are solid sectional manganese steel castings which may be slipped into the mill from the back or through large cleanout doors on each side. The top circular cover plates are placed in the mill without the use of bolts and nuts. Liners are slotted to allow the slots to fill up with rock and aggregate which helps to withstand the heavy wear of the mill. Grate area is a full 180 deg., and there is 5 in. of clearance between the bottom of the grates and the sides of the main frame, and it is said that no plugging is therefore encountered at these points. There are two openings: 12½ in. for secondary crushing and 18-5/16 in. for primary crushing. The hammer tip diameter of the Iowa mill at the Otis plant is 33 in., and the feed opening is 30 in., from which this model receives its designation as a 3033 model. Two other models made by Iowa are known as the 2033 and the 4033, and refer to corresponding dimensions in a smaller and a larger model.



Cross-section view of new hammermill. Note impact action on vertical breaker plate, arrangement of grates, and slotted liners

Ready Mix Products

REX FINDLEY, president of Western Engineering Co., plans to start ready mixed concrete and concrete block manufacturing operations in a plant at Carroll, Iowa.

Open Gravel Pit

A PARTNERSHIP has been formed by Thomas Wacha, Jr., and Alfred Will with the purpose of establishing a sand and gravel business east of Schuyler, Nebr. It will be a wet pit operation with recovery by pumping.

Block Plant Fires

WASHINGTON CONCRETE PRODUCTS CORPORATION, Arlington, Va., reported a fire recently caused damage estimated at $25,000.

WEAVER CEMENT BLOCK CO., Syracuse, Ind., was destroyed by a fire with a loss of $10,000, covered by insurance.

Government Wants More PRODUCTION

Minimum soil requirements call for a production of more than fifty million tons of agricultural limestone

By GUY SMITH*

Guy Smith, Production and Marketing Administration, Department of Agriculture

BASICALLY, the problems of the limestone industry are the problems of agriculture. Our objectives are identical and the success in obtaining these objectives will be determined to a large extent by the manner in which we all pull together for the ultimate good of the industry, the farmer, and agriculture in general.

In accordance with the mandate of Congress, we representatives of the Government are charged with the responsibility of providing the mechanics for the performance of all soil-building practices.

One of the most critically needed practices and one for which we earmark a large percentage of our time and assistance and money to farmers is the application of agricultural limestone. We facilitate and encourage the use of lime in several ways. First, we offer a conservation payment for the application of the material. This payment varies between States and averages between 70 and 80 percent of the cost of the lime delivered to the farm. For farmers who are unable to purchase their entire requirements directly from the limestone vendor, we offer further assistance by way of Government contracts and purchase orders. I will not dwell on the contract method since all of you are familiar with that phase of the program.

Purchase Order Plan

The Purchase Order Plan is comparatively new, and is in operation in several States this year. Under this plan the farmer makes his own arrangements with the vendor for delivery of the lime. A fair price is determined for each transaction. The fair price so determined is the price agreed to between the farmer and the vendor on one hand and the farmer and the county committee on the other hand. If the county committee approves the price quoted the farmer by the vendor, the farmer is issued a purchase order by the county committee which he surrenders to the vendor at the time of delivery. The farmer pays the vendor in cash the difference between the fair price and the applicable practice credit rate. The vendor looks to the Government for payment of the balance due on a purchase order.

In our opinion, the Purchase Order Plan is a step in the furtherance of our policy of distributing all materials through established local dealer channels and making it possible for the farmer and the vendor to conduct their business with as little interference from the Government as possible. Under the Purchase Order Plan, the responsibility for obtaining a source of supply—the determination of price—and obtaining delivery is placed on the farmer and the vendor. As we have stated in the past, we have no desire to be in the limestone business; we will be most happy when the day arrives when the farmer and the vendor can conduct their entire negotiations without the assistance of Government purchases. Until that day arrives we stand ready to either contract for or issue purchase orders for the amount necessary to assure maximum production of limestone.

LIMING MATERIAL CONSUMPTION

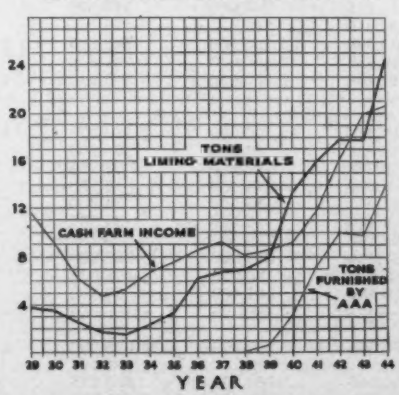


Chart showing tonnage of liming materials used by farmers from 1929 to 1944. The curves indicate the very marked influence of the government purchase and distribution program since 1938. (Prepared by Agricultural Limestone Division, N. C. S. A.)

We are most desirous of extending the Purchase Order Plan as the various State Committees and vendors within the States feel that the situation warrants such action. We are also willing to forego both contracts and purchase orders in areas where we can be assured that the lime program will continue and increase.

I would like to point out that each of us has a responsibility to shoulder and a job to do. When you stop and realize that all civilization is dependent on the fertility of a bit of top soil approximately 4 in. in depth around the world, it is self-evident that the performance of your industry will share a heavy part of the destiny of future civilization.

Educate Employes

It is important that farmers understand the need and value of lime. We are carrying on this campaign continually, but we cannot do it alone; it is imperative that you also join us in spreading the word. It is important that every man connected with the industry, whether he is an executive, foreman, laborer, or trucker, be appraised of the reasons for applying lime. Many a trucker or other worker knows only that he is handling ground rock; he has not the slightest conception of the why or wherefor of agricultural limestone. It is our hope that you will take whatever action necessary to inform all of your employes of the reasons why we must use lime and of the benefits which accrue to all people by virtue of fertile soils. Make every man connected with the industry an active advocate of the use of lime. Every man in our organization intends to preach the story of lime, and if every man in your organization is equipped to do likewise, we will have established the basic foundation necessary to guarantee the maintenance of soil fertility.

The late President Roosevelt once

*From an address by Guy Smith, Production and Marketing Administration, Department of Agriculture, Washington, D. C., before the recent National Crushed Stone Association convention.

said, "The history of every nation is eventually written in the way in which it cares for the soil."

Analyze Needs of Each Farm

This year we have inaugurated a new approach to our Agricultural Conservation Program in most of the States. During past programs the funds appropriated by the Congress for Agricultural Conservation were broken down to individual farms by use of a so-called farm allowance formula. This allowance was determined on the basis of the number of acres of crop land in the farm and without regard to the amount of soil conservation needed. This type of program presented many inequities. In some cases the farm allowance would not permit the performance of nearly enough of the types of soil conservation needed on the farm. In other cases farms had an allowance which was not in keeping with the actual amount of conservation needs.

Under our new plan, the allowance method has been thrown out the window. The conservation needs of each farm will be considered on the basis of the current needs for soil conservation on that particular farm. Even though our old type of program did present many inequities, we must not lose sight of the fact that past programs have contributed greatly to increased conservation of the nation's soils. It is a matter of record that the soils of thousands of farms have been restored to a state of high fertility, and that the need and value of soil conservation has been demonstrated in an educational way to millions of farmers. This new approach to the conservation problem will permit the continuance of all established and proven conservation practices and will also provide more latitude for the judgment of the community and county committeemen in obtaining additional conservation on those farms where the need is most urgent.

In each county the county and community committeemen have met and selected from all the practices approved for the State, the practices most critically needed in their county. The practices so selected are the only practices which will be approved for payment in the county during 1946.

For the farmer to earn a payment, each practice must have the prior approval of the county committee. Each county is given a definite amount of money to use in obtaining performance of these selected practices. The community committeemen are going down the road right now to visit each farmer and assist him in planning his 1946 conservation program. The amount of funds available for each farm will be limited only by the amount of conservation needed on the farm after consideration of the needs of all farms and the amount of the over-all county budget. It is possible under this plan for a farmer whose allowance in past years would only permit the approval of five tons of lime to receive 25 or 50 tons of lime if that practice was the most critically needed practice on his farm.

AAA LIMING MATERIALS

State and Region	Total Used 1944	AAA Purchase 1944	Total Used 1945[1]	AAA Purchase 1945[1]	AAA Purchase 1946[1]	Annual Requirements	Method of Purchase 1946
Maine	98,000	90,000	95,000	79,000	92,000	283,000	Contract
New Hampshire	37,000	35,000	34,000	32,000	39,000	130,000	Contract
Vermont	125,000	118,000	110,000	102,000	74,000	434,000	Contract
Massachusetts	73,000	66,000	78,000	69,000	80,000	260,000	Contract
Rhode Island	10,000	8,000	10,000	9,000	8,000	34,000	Contract
Connecticut	72,000	62,000	62,000	52,000	59,000	215,000	Contract
New York	787,000	674,000	825,000	750,000	728,000	2,689,000	Contract
New Jersey	234,000	117,000	240,000	101,000	100,000	312,000	Contract
Pennsylvania	1,190,000	957,000	1,250,000	840,000	857,000	2,265,000	Contract
NORTH EAST REGIONAL TOTAL	2,626,000	2,127,000	2,704,000	2,034,000	2,037,000	6,622,000	
Delaware	60,612	21,690	36,000	10,500	25,000	73,215	Cont. & P. O.
Maryland	335,505	142,530	300,000	60,000	70,000	353,824	Cont. & P. O.
Virginia	812,300	681,108	776,000	455,000	600,000	2,157,312	Contract
W. Virginia	520,314	467,038	400,000	300,000	400,000	1,513,750	Contract
N. Carolina	500,316	437,122	373,650	275,000	400,000	1,766,802	Contract
Kentucky	976,246	628,137	675,000	375,000	450,000	1,561,813	Cont. & P. O.
Tennessee	1,347,803	507,038	1,405,000	275,000	800,000	1,878,912	Cont & P. O.
EAST CENTRAL REGION TOTAL	4,553,096	2,884,663	3,984,650	1,750,500	2,745,000	9,305,628	
Illinois	1,048,324	841,757	3,600,000	650,000	600,000	4,975,141	Cont. & P. O.
Indiana	1,785,772	907,234	1,725,000	829,342	800,000	2,349,286	Contract
Iowa	2,099,267	663,752	2,400,000	750,924	750,000	5,717,749	Contract
Michigan	834,785	331,855	580,000	510,576	600,000	1,083,626	Cont. & P. O.
Minnesota	341,397	290,618	280,000	223,117	250,000	871,542	Contract
Missouri	1,607,341	1,094,646	1,200,000	845,503	1,000,000	4,248,300	Contract
Ohio	1,567,371	799,559	1,400,000	445,476	600,000	3,398,866	P. O.
Wisconsin	2,246,857	1,314,284	2,200,000	1,240,040	1,000,000	2,495,475	Contract
NORTH CENTRAL REGION TOTAL	14,521,123	6,414,274	13,385,000	5,494,978	5,600,000	25,139,985	
Alabama	243,168	212,923	64,300	59,300	70,000	1,299,600	P. O.
Arkansas	85,559	69,738	86,500	75,700	80,000	433,200	P. O.
Florida	60,654	5,020	67,100	5,700	10,000	142,800	P. O.
Georgia	112,764	83,911	68,500	51,000	60,000	1,320,300	P. O.
Louisiana	291,648	258,493	37,800	33,500	100,000	930,400	P. O.
Mississippi	765,332	706,700	359,900	339,100	350,000	1,427,500	P. O.
Oklahoma	387,548	351,514	247,800	226,300	250,000	1,208,600	P. O.
South Carolina	449,715	355,418	190,200	171,800	150,000	1,645,300	P. O.
Texas	10,641	10,287	61,400	59,300	100,000	2,334,700	P. O.
SOUTHERN REGION TOTAL	2,407,029	2,054,004	1,183,500	1,021,700	1,170,000	10,742,400	
California	5,742	.....	.....	.....	.....	116,929	None
Kansas	627,671	460,140	800,000	543,576	750,000	1,111,000	Contract
Oregon	30,331	18,941	35,000	15,139	30,000	180,220	Contract
Washington	13,645	1,819	18,000	9,654	10,000	60,638	P. O.
WESTERN REGION TOTAL	577,389	480,900	853,000	568,369	790,000	1,468,787	

[1]Estimated.

By the same token, if a particular farm has been completely limed or, in the opinion of the community committeemen and the farmer, other practices are more urgently needed, it is possible that no lime will be approved for payment on this farm. Another example would be a case where a large drainage ditch on one farm would benefit other farms. It is possible, under this program, to provide one farm with sufficient assistance to build the drainage ditch and provide no funds this year for the other farms which would benefit from this drainage project.

Briefly, the success of the program rests on the judgment of the community committeemen and the farmer as to what are the most critically needed practices on each farm and the amount of assistance necessary to get the job done.

As to how this type of program will affect the use of lime, let me assure you that there will be a market for all the material which you will be able to produce. As an example, I would like to cite what happened to my own county which is Lucas County, Iowa. I attended the meeting there last December at which the 36 community committeemen in my county and the county committee met to select the practices to be approved for payment in Lucas County during 1946. By a unanimous vote the application of limestone was selected as the number one practice for 1946, and it was the consensus of opinion that it would continue to be the number one practice in Lucas County for years to come. Now my county needs many types of conservation practices, including contouring, fertilizer, and the plowing under of green manure crops, and many other practices. I believe the decision of these farmers is representative of the thinking of all well informed farmers in the areas of acid soils. These men realize that the basis of all soil fertility is lime, and if they are to administer a sound conservation program it is imperative they do the first things first. It would be of little value to contour or terrace in an effort to hold the fertility of the soil unless you first do the things which would create a fertile soil.

How Producers Can Cooperate

We think it worthwhile for you or your local representative to visit each county office, consult with the county committee concerning the volume of lime for which approval is intended, and work out a plan with each county committee for delivery of the tonnage approved. The farmer will earn credit regardless of whether the material is purchased for cash or through A.A.A. contracts or purchase orders. Remember . . . these approvals represent the considered judgment of the community and county committees and the farmers as to where lime is most critically needed. Give the county committee some idea as to the volume which can be expected in the county . . . make every effort to deliver lime first to those farmers who have prior approval . . . their lime orders are the only ones in the county which will receive conservation payments and these farmers are the ones who need lime first. Since we do not have enough lime to go around, let's put what we do have where it will do the most good. I can assure you that every county committee is ready and anxious to work with you in planning the limestone phase of their program. It will be of little value and will cause many disappointments if a county committee approves 50,000 tons of lime when your industry can only furnish 20,000 tons of lime in the county. Let's not end another year with a lot of unfilled promises; let's work it out ahead of time and make commitments which we are reasonably sure of being able to fill . . . and try our best to meet those commitments. A farmer who waits two years or longer for a promised order of lime soon ceases to be a friend of the program or a friend of your industry.

As noted in the accompanying chart, the growth of your industry has been amazing during the past 10 years, but you have only scratched the surface; you still have better than two customers for each ton of lime.

Twenty-three million tons of lime is a far cry from the 1½ million tons of lime distributed in 1933. However, 23 million tons isn't much more than a maintenance job. We will continue to lose soil fertility until we can get at least 51 million tons of lime annually.

A.A.A. Boosts Production

Let's look at the chart for a minute. Prior to 1933 the consumption of lime and farm income traveled in the same direction, mostly downward. After 1933, farm income started upward but lime deliveries didn't pick up until 1936, which was the first year A.A.A. offered a conservation payment for the application of lime. It is interesting to note that the consumption of lime in 1936 was almost double the 1935 consumption. During the years 1936 to 1940 farm income stayed fairly constant; in fact, it decreased slightly but the consumption of lime showed a steady increase. This increase, no doubt, can be attributed to Government assistance by way of A.A.A. payments. Then in 1939 the A.A.A. started to contract for the delivery of lime. I think it significant that while farm income between 1939 and 1940 increased only slightly, the consumption of lime increased from 9 million tons in 1939 to 14 million tons in 1940, and since 1940 the use of lime has increased tremendously each year except during the critical war year of 1943. However, after considering all the obstacles which confronted your industry in 1943, we still think you did a marvelous job.

There appears to be no doubt that A.A.A. payments and A.A.A. purchases contributed to the increased use of lime, but we also must not lose sight of the influence of farm income on the consumption of lime. Today, and in the years to come the cost of lime and the farmers' income must bear an economically sound relationship. Each year the amount of lime being purchased for cash is increasing. Each year the amount purchased by A.A.A. is decreasing; even on A.A.A. purchases the farmer must contribute part of the cost in cash. This all adds up to one thing; if your industry is to eventually reach the place where your business with the farmer can be conducted without Government assistance and the use of lime is to reach desirable levels, the cost of lime to the farmer must remain in its proper relationship to the farmer's income. We are not extortionists nor are we advocates of price cutting. We acknowledge that you are entitled to a fair profit for your efforts. We insist that you receive a fair profit because we know that it is necessary for the welfare of the nation that you continue in business and continue to expand your operations to more than twice present production. But, for your good and the nation's good, please do not let the old law of supply and demand cause you to peg prices at a point which will discourage the farmer from purchasing lime in the quantities he actually needs.

New Era in Business

We are on the threshold of a new era in business and in Agriculture. The emphasis will be more and more on encouraging private enterprise and the rebuilding, expanding, and replenishing of the industrial and agricultural resources of the nation. Your industry has a running start in this new era of accomplishments; throughout the war years, you mastered many of the obstacles which would have discouraged a less aggressive industry. Your accomplishments during those years were all the more remarkable because, generally speaking, you were a young industry. In fact, many of you actually entered the business since Pearl Harbor. It is our opinion that if the initiative, resourcefulness, and aggressiveness shown during the past three years is pursued into the postwar period, the production of liming materials can be greatly increased.

Build Agstone Plant

E. H. EULER, Mansfield, Mo., expects to start operating an agricultural limestone plant five miles east of this city. Initial capacity will be 40 tons an hour.

Fine Grinding Improves Product

Toms Brook Lime and Stone Co., Inc., uses stone too small for lime kilns for production of finely ground agricultural limestone

By H. E. SWANSON

Stone for lime kilns is drawn up in cars over ramp. Note side-dump arrangement for feed to kilns

BY providing farmers in Shenandoah County with spreader truck service and supplying a finer agricultural limestone than required by A.A.A. specifications, the Toms Brook Lime and Stone Co., Inc., Toms Brook, Va., has built up an agstone business which promises to continue at a high level regardless of cuts in allotments by the A.A.A.

It is interesting to note the manner in which production of agstone was started. In 1932, an alert farmer, who had purchased a load of stone for his driveway, and who accidentally spilled some of it on his lawn, noticed the difference in quality of the grass where the limestone was spilled. Acting on the supposition that the limestone was responsible for the added richness of his lawn, he ordered screenings and spread them on his meadows. Results confirmed his hopes, and his suggestion that the Toms Brook Lime and Stone Co., Inc., install a pulverizer for production of a finer material, was acted upon. News of his discovery soon spread throughout the county, and it was not long before other farmers were availing themselves of the agstone produced here. It was during these early days that a finely ground product was made. This fine product has not only been maintained, but has been improved, and at present, an agstone is produced which far exceeds the specifications of the A.A.A. A fleet of three Baughman spreaders mounted on 5-ton International trucks is maintained to add another service to the farmers in this county.

Specifications

Specifications of the A.A.A. require 100 percent passing 10-mesh. A typical sieve analysis of the agstone produced here shows the following:

97.9 percent passing..... 20-mesh
53.9 percent passing..... 60-mesh
41.6 percent passing.....100-mesh

Other tests show the following characteristics:

	Percent
Calcium carbonate content	92
Aluminum carbonate content	0.4
Magnesium carbonate content	2.5
Silica carbonate content	4.25

About 50 percent of total production is agricultural limestone, 25 percent is a specially-sized, high-grade stone for shipment to a paper manu-

Ring roll pulverizer which crushes to final size for agricultural limestone

Bucket elevator which takes product of jaw crusher at right

facturer in Covington, Va., and the balance is burned lime which is shipped to steel mills in the Pittsburgh area. Primary selection of the three types is done by hand in the quarry. Total production is about 160 tons per day.

Quarrying Operations

The limestone formation lies on a 45-degree angle, and consists of several layers of varying quality. The lowest grade has a calcium carbonate content well above specifications for agstone. Vertical holes, starting at 2½ in. and ending at 1¼ in. are drilled in benches to a depth of 20 ft. on the 180-ft. face. Spacing is about 3 ft. with a 3-ft. burden. Two jackhammers, one a Sullivan and the other an Ingersoll-Rand, drill holes and are also used for secondary breaking of larger pieces. Air is provided by an Ingersoll-Rand, double-cylinder, steam-powered compressor and an O. K. gasoline-powered compressor. Light blasts are made so that the stone will not break up too much. This is to insure reclaiming enough stone sized from 5 to 8 in. for shipment to the paper mill. Pieces which are too large are broken by jackhammers. A 20-percent dynamite is used to assist in obtaining a blast light enough to obtain large pieces.

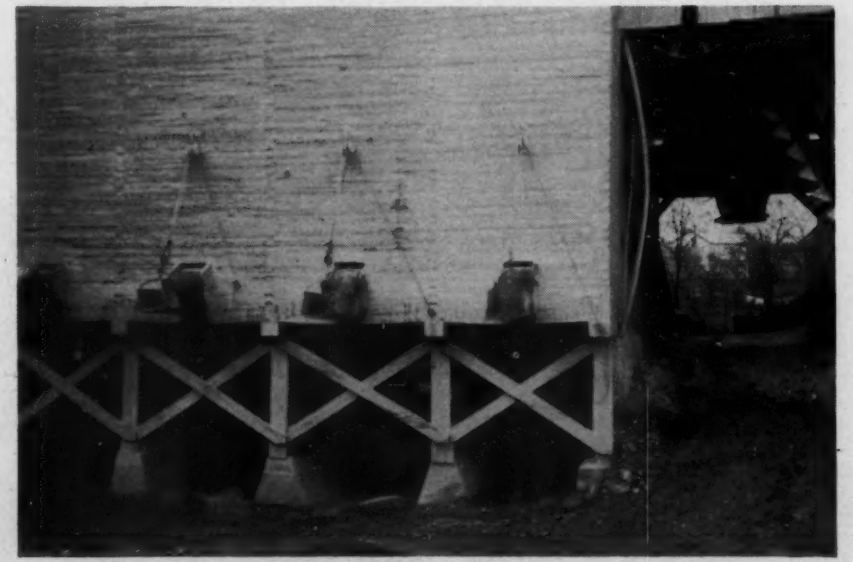
Haulage

Haulage from the quarry is by truck and rail. Six 2-ton capacity skips are handled by truck and twelve 2-ton capacity carts are hauled by cable-hoist on 30-in. track to the plant. Empty skips and carts are placed at locations in the quarry where stone is ready for loading. The various sizes are then loaded into cart or skip, by hand. The highest-quality stone, sized from 5 to 8 in. is loaded for shipment to the paper mill; the 2- to 5-in. size is for feed to the lime kilns; and smaller sizes, as well as the lower quality stone, is sent to the plant for screening and crushing into agstone.

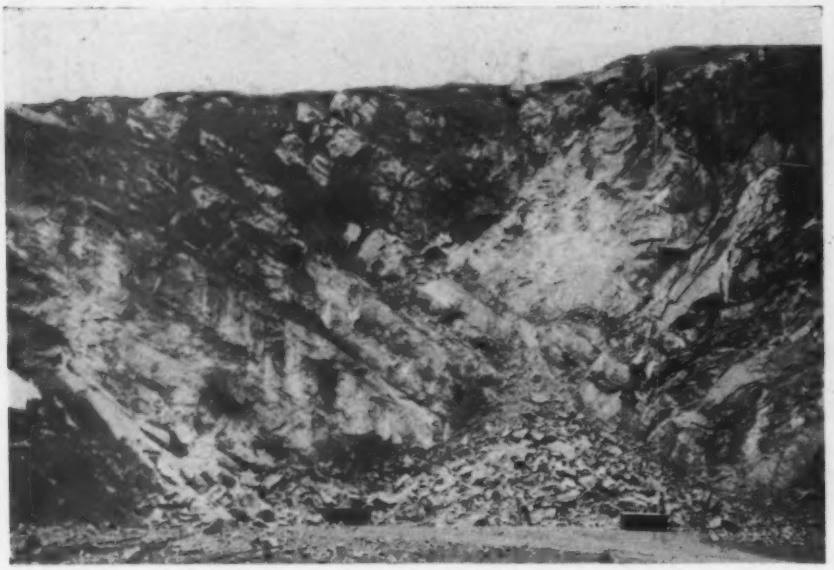
The larger pieces are usually loaded into skips, which are then lifted to the body of a G.M.C. truck equipped with a Brooks Load-Lugger. The truck transports the stone to a railroad siding for loading gondola cars. In the event that there are no cars available at the siding, this stone may be sent to a delivery hopper at the plant, either by truck or rail, for storage in a 20-ton capacity steel silo bin. The bin has a bottom-discharge for truck loading. The hopper feeding the bin has a grizzly, set at a 45-degree angle, over which the stone passes to the bin. The grizzly is a sheet of ¼-in. steel with 1- x 4-in. openings, and the throughs are sent by chute to the primary crusher, for agstone production. The other two types of stone are loaded into cars, as a general rule, although, as mentioned before, truck haulage is also used.

Quarry cars are dumped to hopper at left for delivery to crusher or to hopper at right

Single-deck, enclosed, electrical vibrating screen. Oversize returns by chute, to the left



Side discharge chutes from bins for truck loading. In the driveway to the right may be seen chute which feeds sized stone from silo for truck loading and for delivery to paper mill



View of quarry showing angle of dip of stone strata. Dump buckets may be seen near quarry face

Cars are hauled up to the plant pulled by a Lambert Steam Hoist with ⅝-in. cable. Cars loaded with stone for the crusher are dumped into a receiving hopper, opposite the hopper which receives the large stone. Cars may be dumped to either side, manually. Stone for the kilns by-passes the two receiving hoppers. The cars are pulled up to a turn table just in advance of the steam hoist. They are then turned at right angles and are pushed on another track to the lime kilns. The cars are then dumped, manually, into the kilns.

Crushing and Screening

Stone for agstone production, fed into the receiving hopper, is sent to a 10- x 15-in. Sturtevant jaw crusher, which crushes to a top size of 2 in. Power for the crusher is provided by a 45-hp. center-crank Frick steam engine. The stone then goes by bucket elevator, 60-ft. centers, to a 2- x 8-ft. triple-deck Tyler vibrating screen. The steam engine also powers the elevator and screen. Square openings on the top deck of the screen are 1½ in.; the middle deck is divided, the upper half having 1-in. and the lower half having ¾-in. square openings. The lower deck is also divided, with ¾- and ½-in. square openings. Throughs drop by gravity to four 60-ton capacity storage bins while the oversize drops to a XXZ Gruendler hammermill. Stone from the hammermill is closed-circuited by bucket elevator, 20-ft. centers, with the Tyler screen. Power for the mill and the elevator is provided by the same steam engine.

The bins to which the stone is sent have side discharge openings on two sides. Stone is drawn from the outer side into trucks while the inner side feeds to a 14-in. belt conveyor, 74-ft. centers, for transference to a No. 1 Sturtevant ring-roll pulverizer. Stone from this pulverizer goes by bucket elevator, 50-ft. centers, to a 3- x 5-ft. single-deck Tyler Hummer screen, which has 12-mesh screen cloth. Power for the conveyor, bucket elevator, and pulverizer is provided by a 35-hp. Frick steam engine. Oversize from the enclosed screen flows by gravity to one of the bins, for return to the pulverizer by belt conveyor, while the throughs (agstone) drop to a fifth bin. This bin also has a 60-ton capacity, and has a side discharge for truck loading.

For the convenience of customers, a fleet of three 5-ton International trucks equipped with Baughman spreaders is maintained. Contract with the A.A.A. is on a delivery-to-farm basis, while the farmer pays for the spreading. This company only delivers and spreads in Shenandoah county. The longest haul, therefore, is only about 25 miles, while an average haul is about 10 miles. Approximately 90 percent of sales is on A.A.A. contract and about 95 percent of agstone sold is spread by the Baughman spreaders. The prevailing price in this county is $1.65 per ton F.O.B. and $2.50 per ton delivered.

In 1942, fire destroyed much of the plant, and the majority of present equipment was installed when the plant was rebuilt.

R. S. Wright, Sr., is president of the Toms Brook Lime and Stone Co., Inc. R. S. Wright, Jr., is vice-president and secretary, E. R. Miley is general manager and treasurer, and W. D. Kibler is plant superintendent.

South American Dolomite

DOLOMITE from the only known deposit in South America is now being exploited for use in the manufacture of hydraulic cement and in competition with white cement for exteriors of stucco or plaster. Other uses are in the glass industry, in the manufacture of magnesium carbonate, in fertilizers, and as the raw material for the manufacture of Sorel cement, used in mosaics.

This South American reserve, estimated at 24,696,000 tons of crude material and 8,391,600 tons of select material, is located in the northern province of Tarapaca, Chile.

Laboratory tests of the dolomite have been very favorable, and future development of the deposits industrially is predicted.

Concrete Block Plant

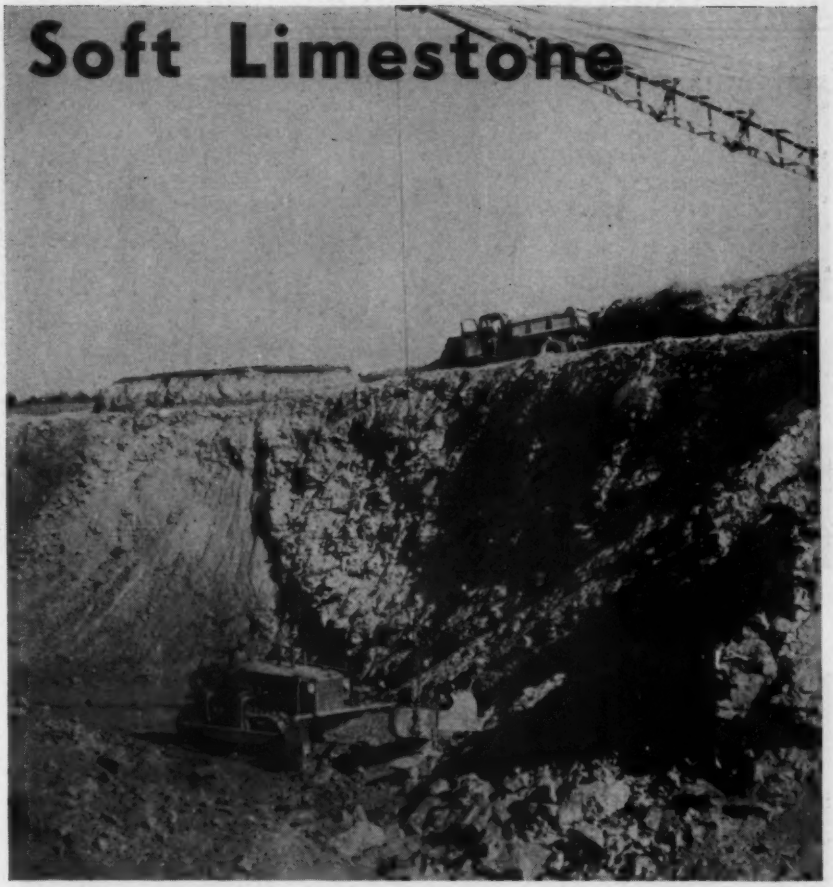
MCMINNVILLE CONCRETE BLOCK CO., McMinnville, Tenn., will produce both concrete and cinder block and other concrete masonry units at a new plant soon to go in production. Brown Neal is manager.

Elevating dump bucket loaded with stone to body of truck

Processing Soft Limestone

Schield Soft Limestone Co., Waverly, Iowa, produces large volume of agstone with two crushers and vibrating screen.

By RALPH S. TORGERSON



Dragline excavates stone from the top of the quarry. Bulldozer pushes stone within reach of bucket

STARTING on a "shoe-string" in 1930, Vern Schield and his brother, Wilbur, built up the agricultural limestone business of the Schield Soft Limestone Co., Waverly, Iowa, until the tonnage in 1945 climbed to 60,000 and it is continuing its upward swing in 1946.

Although part of the success of this company can be attributed to the unusually soft limestone found in the deposit and the rapidly expanding market for its product, the aggressive methods and mechanical genius of the owners have had much to do with the progress that has been made.

Before the Schield brothers took over the property, the quarry had been operated by three other companies but financial difficulties overtook the enterprise and not much progress had been made in the development of the plant.

The original 40 acres of the quarry property was purchased in 1936 for $1000, but since that time additional land has been acquired so that it now embraces 100 acres. Another quarry property was just recently purchased, but the stone in this case is a good hard limestone suitable for road construction aggregates and its production will largely be devoted to this purpose.

Stripping and Blasting Operations

Little machinery was available when the Schield brothers took over the property, and the first stone was dug out by hand. Crushing was done with a corn shredder head. In 1931 an old Thew steam shovel was purchased which served faithfully for seven years. As little money was available for new equipment in the depression years, the equipment had to be kept going with the aid of a welder and many mechanical improvisations to substitute for parts.

In place of the old steam shovel, the company now operates a 303 Koehring gasoline dragline equipped with a ¾-cu. yd. Daniels-Murtaugh bucket for loading stone in trucks in the quarry. A 104 Northwest gasoline shovel of 1½-cu. yd. capacity is used for stripping assisted by a Model L

View of crushing plant with truck dumping stone to roll crusher feeder. To the left may be seen the concrete stave silo storage bin and stockpile

Conveyor belt inclining up to vibrating screen and pulverizer

Diesel engine driving hammermill. Vibrating screen may be seen in background

Pulverizer receiving feed from oversize of vibrating screen

95-hp. Allis-Chalmers tractor with a bulldozer to push the overburden cast by the shovel over to a worked out area of the quarry.

Below the overburden, which averages 15 ft., is a 22-ft. strata of limestone having some very unusual characteristics. Pieces of stone picked up in the quarry can be easily crushed with the fingers and is often tan in color when freshly exposed, yet it tests 95 percent $CaCO_3$ and becomes lighter in color when processed.

Stone exposed in the quarry face is fairly well broken in structure in the seams but some blasting is necessary to assist the dragline in loading the trucks. A Chicago Pneumatic wagon drill is used to sink 2½-in. holes to a depth of 18 ft. A 210 LeRoi compressor supplies the air. No particular pattern of drilling is used on account of the variety of drilling conditions encountered.

Below the present quarry floor is another 8-ft. strata of rock similar in character to the 22-ft. deposit above. This 8-ft. strata is below the adjacent river level, and is worked in the drier seasons of the year which takes a minimum of pumping. To remove surface water accumulations at the present quarry level, two Construction Equipment Co. pumps, a 2½-in. and a 4-in., are now used on occasions when heavy rains occur.

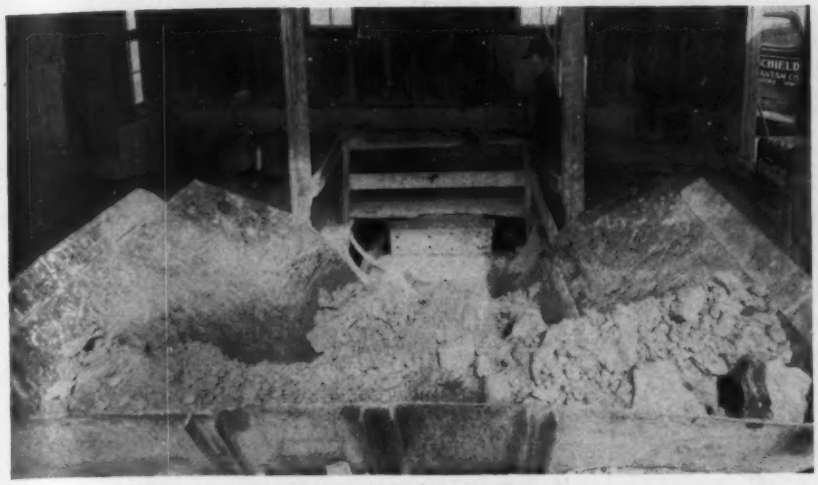
A dragline bucket is used to load stone as it is possible to operate the Koehring machine at the top of the stone deposit, reducing the grade up which trucks will have to move to the plant and the machine is out of the bottom where water may sometimes accumulate.

Plant Operation

Three Ford trucks haul stone from the quarry to the crushing plant, a distance of about 400 ft. The plant has a production of 70 tons an hour. Trucks back up a fill and dump to a plate feeder which is operated with a 5 hp. Louis-Allis electric motor with push-button control, giving a controlled feed to a single-roll 21- x 42-in. McLanahan-Stone crusher.

Crusher throughs are carried up a 24-in. Pioneer inclined belt conveyor, 35-ft. centers, to a Simplicity screen with the oversize going to a 3XC 30-in. Gruendler center-feed hammer mill operated with an 85-hp. Cummins Diesel engine. The operator of the roll crusher on his platform also controls the operation of this conveyor by push-button.

It is of interest to note that the Gruendler hammer mill grate bars are set at ½-in., and the product is screened over a 3- x 6-ft. Simplicity vibrating screen with ½-in. screen openings. The extreme softness of the stone makes this possible as it rapidly disintegrates. Any large particles which may be spread on the soil break up into small particles after only a short weathering period.



Single-roll crusher is fed by apron feeder

Agricultural limestone passing the Simplicity screen drops to a 24-in. Universal conveyor, 76-ft. centers, inclining up from the crushing and screening plant to an 800-ton capacity storage silo, 28 ft. in diameter and 34 ft. high. This bin is of reinforced concrete silo stave construction.

To Change Stockpiling

At present temporary excess production is stockpiled outside near the plant by means of trucks and a ¼-cu. yd. shovel made by Schield Bantam Co., a subsidiary company. This unit also loads trucks of haulers. Later, it is planned to install a Pioneer conveyor belt, 70-ft. centers, extending out from the 800-ton storage bin to the outside stockpile area. A Howe scale is used to weigh loaded trucks of contract haulers. No agricultural limestone is hauled by company trucks.

The attractive office and home of Vern Schield is located at the quarry and was largely built from timber and other materials available on the quarry property. He later intends to establish his headquarters and home in Waverly, Iowa, which is about six miles from the quarry.

Foreign Industrial Minerals

A RECENT REPORT of the U. S. Bureau of Mines gives information on the potential resources and present production of industrial minerals in various foreign countries, centering the discussion mainly around the Middle East and North Africa. According to the report almost the only countries in that area with large scale mining operations for export trade are Egypt and Cyprus Colony. In most of the others large scale mining is held back by lack of geological information, distance from shipping ports or poor quality of deposits. The largest export material is phosphate rock, several hundred thousand tons being produced annually, and most of it coming from large deposits in Egypt along the Red Sea and the Nile Valley or from Trans-Jordan. Deposits of this rock also occur widely throughout most of the countries in this area. Deposits of gypsum, mica, quartz, talc, feldspar, barite and asbestos are scattered throughout the Middle East, asbestos and gypsum supplies for export coming largely from Cyprus Colony. Although Persia is described as having large potential mineral wealth lack of information about the deposits and limited production facilities have held back development there.

The report was also concerned with South America, centering the discussion largely around the cement industry. In Chile the cement industry hopes to make the country self-sufficient in cement production with the addition of the new Juan Soldado plant. In Peru, however, duties and other charges in the importation of cement have been suspended because of the need for imports for construction purposes.

Close-up of spreader truck receiving load of agstone from bin. Truck, to the left, is stockpiling

Iowa Agstone Meeting

IOWA AGRICULTURAL LIMESTONE ASSOCIATION recently held its first annual meeting in Des Moines, Iowa. S. P. Moore, chairman of the Agricultural Limestone Division, National Crushed Stone Association, and president of Concrete Materials and Construction Co., Cedar Rapids, Iowa, was one of the featured speakers. W. F. Sharpe, Dillon-Sharpe Co., Columbus Junction, Iowa, was elected president; Harry D. Bellamy, Concrete Materials & Construction Co., Cedar Rapids, Iowa, was re-elected vice-president; and Clint A. Allen, Sargent Brothers, Inc., Des Moines, Iowa, was elected executive secretary and will open a permanent headquarters.

The newly elected board of directors consists of the following: W. F. Sharpe, Columbus Junction; Harry D. Bellamy, Cedar Rapids; Grover C. Hubbell, Des Moines; Clint A. Allen, Des Moines; Vern Schield, Waverly; Don Kaser, Adel; Ernest I. Sargent, Des Moines; E. F. Schildberg, Greenfield; C. B. Clarke, Gilmore City; and Paul M. Nauman, Dubuque.

Fertilizer Catalyst

ACCORDING to a recent report, prior to the war a German scientist discovered that an addition of 2 percent manganese to a phosphoric rock mixture in the making of super phosphate was a definite advantage, probably acting as a catalyst in making the phosphoric rock more plant digestible or in aiding plants to absorb more of the trace minerals within the soil itself.

Transfer Quarry Lease

STORMS & FLUE, contractors, have taken over the lease of a limestone quarry on the farm of Martin Cook, 13 miles southwest of Bosworth, Mo. The lease was formerly held by the Combs township board. The contracting company will take out stone for rip rap to be used in protecting the banks of the Missouri river.

Monolith Alumina Plant

MONOLITH PORTLAND MIDWEST CEMENT CO. will soon start operations at its $4,600,000 alumina plant south of Laramie, Wyo.

SALES PROMOTION Needed for Future Market

Methods of merchandising agstone, and practical ideas for preparation of advertising material

By PHILIP E. HEIM*

THE DAY has passed when agricultural limestone is classed as a by-product. This was well demonstrated at the first convention of the Agricultural Limestone Division of the National Crushed Stone Association, held in Cincinnati, Ohio, February, 1946. It was emphasized that more effort must be put forth by producers to market agricultural limestone in an orderly fashion. Advertising and sales promotion must be done by the industry if it is to get a fair share of the farmer's dollar, and there will be plenty of competition for it.

Because agstone formerly was called a by-product, it had an inferiority complex, and so did the people that were selling it. The executives of many companies never gave it much consideration, but since the Agricultural Adjustment Agency began to operate, it has come into importance.

Ours Has Been a Favored Industry

There never was an industry that received so much free advertising as this industry. Most of the agricultural experiment stations in the country have experimented with limestone for many years and studied its effect on the soil and the yield of crops. The results of these experiments have been published in bulletin form and distributed to the farmers in their respective states. County Agricultural agents have been spreading the "Liming Gospel" for years. State Universities and Agricultural colleges through their agronomy departments have printed and distributed many bulletins, as to why farmers should lime their soils and showing the increase in crop yields that could be expected. The farm papers have given liberally of their space to stories on agricultural limestone and its relation to the maintenance of soil fertility and farm income.

Sample of attractive poster which was printed in four colors in co-operation with the Ohio State College of Agriculture

This past year some banks have advertised in local newspapers, advising farmers to lime their soils. The Federal Reserve Bank of Cleveland held a series of some 30 meetings in Ohio last summer with the rural banks. Cooperating with the Federal Reserve Bank in this program were the extension and agronomy departments of Ohio State University. The use of limestone was the basis of their discussions. A plan was also presented whereby farmers who borrow money to purchase limestone, could repay the loan over a period of four or five years.

The Agricultural Adjustment Administration through its program since 1936, has done more to promote and stimulate the use of agricultural limestone, than the industry has ever done. It is true that some companies have done some advertising and promotional work in the past years, but it is apparent that many have left the job to some one else.

Individual Company Merchandising

The Agricultural Adjustment Administration has been the industry's largest single purchaser. Companies

*Sales Manager, Agricultural Limestone Dept., The Carbon Limestone Co., Youngstown, Ohio.

in business for years were enabled to sell their entire production without any effort, and could have sold more had they been able to produce it. Many new companies which had never produced agstone before have entered the field in the past ten years and they, also, have been able to sell their output without difficulty. I do not believe that the Agricultural Adjustment Agency will continue to purchase as large quantities of limestone as it has in the past. The tendency seems to be to require the farmer to pay a portion of the cost, and gradually to get him to make his own purchase. With this trend, it is very apparent that the producers of agricultural limestone should begin to advertise and do promotional work in order not only to keep the demand at existing levels, but to increase it.

In this postwar period there are many things that the farmers and their families require and should have; some to lighten the farm work and others to improve the home and make life more enjoyable for all members of the family. In a recent survey among farmers, to determine what they will purchase first when more merchandise is available, wire fence was the first choice and, second, more fertilizer. If farmers are to use the amount of agstone they should use to obtain maximum production and good fertility practices, agstone producers must inaugurate an advertising and sales promotion program, and go after the business. If they fail to do so farmers will take the lines of least resistance and will purchase merchandise from those who keep after them the hardest.

Another sample of posters in two colors prepared by The Processed Limestone Association, Inc.

An Agricultural Limestone Department

The selling of agricultural limestone is a business by itself and can best be conducted in a separate department, of a commercial crushed stone plant. Salesmen who handle more than one line of stone products are employed by some concerns, but the companies which have had a great deal of experience, prefer to have salesmen who sell agricultural limestone exclusively. Today, agstone is a specialty product which requires servicing, and by this I mean spreading. The job of selling is not completed until the material is spread on the field.

Selling through established dealers is to be preferred to selling direct to the farmer. Dealers see the farmers in their trading areas frequently when they come to town to purchase other farm supplies. Resale work with a dealer is very helpful, especially in

Sample of series of pamphlets distributed to the farmer which are designed as chapters with perforations at the side for insertion in a folder

getting him established with your product. One reason the Agricultural Adjustment Agency has done so well in getting farmers to participate in the program was because the community committeemen traveled down the road, stopping at every farm, telling about the program and getting the farmer's participation. It was the personal contact that did the job so well. As agstone producers we should profit by their experience.

Kinds of Advertising

In general, producers have not advertised very much, and some who have, did not follow through with a continuous, well-planned program. Advertising budgets on the average have been small. The managements of some companies are of the opinion they should not advertise when they are able to sell more than they can produce at the present time. This condition will not always exist. The company name and the products it produces should at all times be kept before the consumer. When competition becomes keen and business more competitive, the producers who have consistently advertised are the ones most likely to maintain sales. The long-time benefits of advertising should be understood and appreciated.

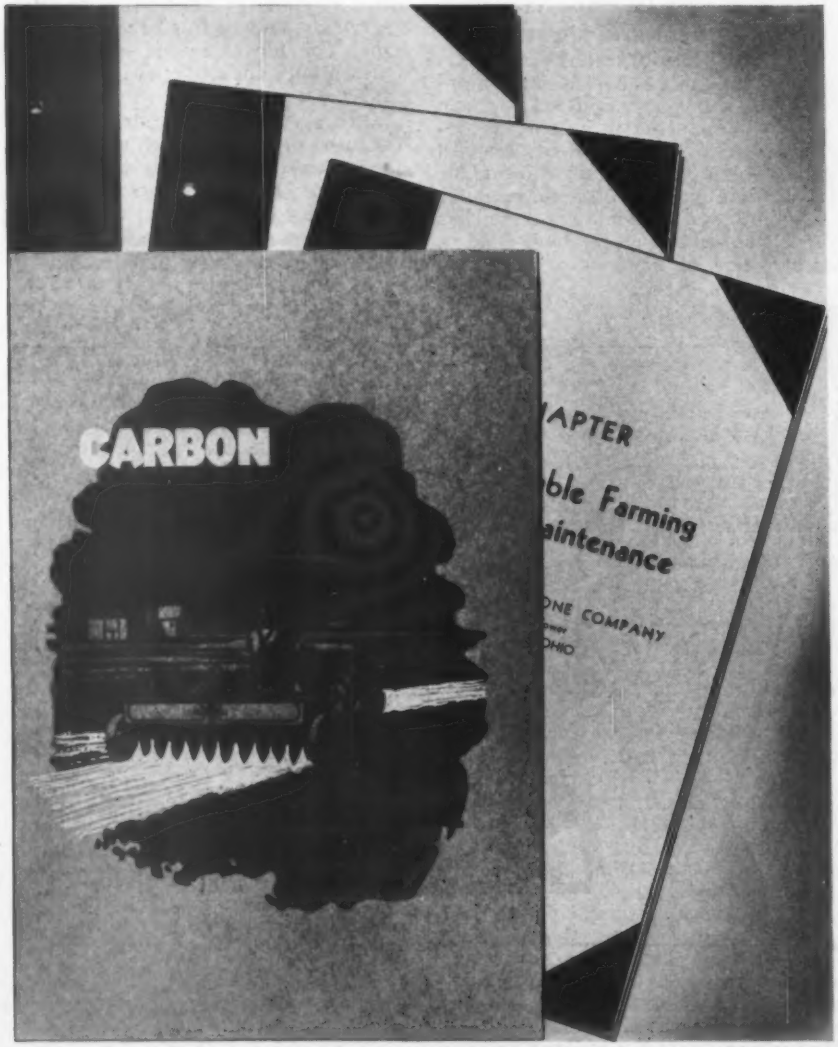
Individual company advertising and cooperative advertising may be used to advantage and without conflict. By cooperative advertising I have reference to material prepared and printed by a group of agstone producers who are operating as a state, local or national association, and the material will be available to the members of the association. I believe every association should have an active advertising committee.

I am convinced that individual company advertising should be used and that such advertising may be tied in effectively with the general program of an association. Specifically, new pictures can be used for illustration and a personal message from the company may be added.

There are three distinct advantages in cooperative or group advertising: first, a saving in the cost of printing; second, all producers are advocating the same thing; and third, the advertising will be more attractive and appealing. Large quantities of such advertising can be purchased at lowered cost and a substantial saving will result to the producer who would ordinarily buy in small quantities. Many companies could pay their dues in an association from the saving on the printing of one folder. The second advantage can best be illustrated by citing the program of the Ohio Processed Limestone Association. It was decided in 1942 that the association should do something to get farmers to apply limestone in months other than April, May and September. The demand was so large in these months that it was impossible to fill their orders, and, for the balance of the year the plant was more or less idle. If shipments could have been made through more months of the year, the extreme peaks could be lowered, operations would be more uniform and deliveries more prompt.

Before starting this campaign, the Agronomy Department of Ohio State University was consulted and its endorsement was secured. The Agronomy Department was interested because it was a means of getting more limestone on the farms. The assistance given through the university was very helpful. It was decided to use posters. All members of the association used them, posting them in the warehouses of their dealers. With 24 companies recommending the same practice, it can be readily seen that this program was much more effective than had it been done by one or two companies.

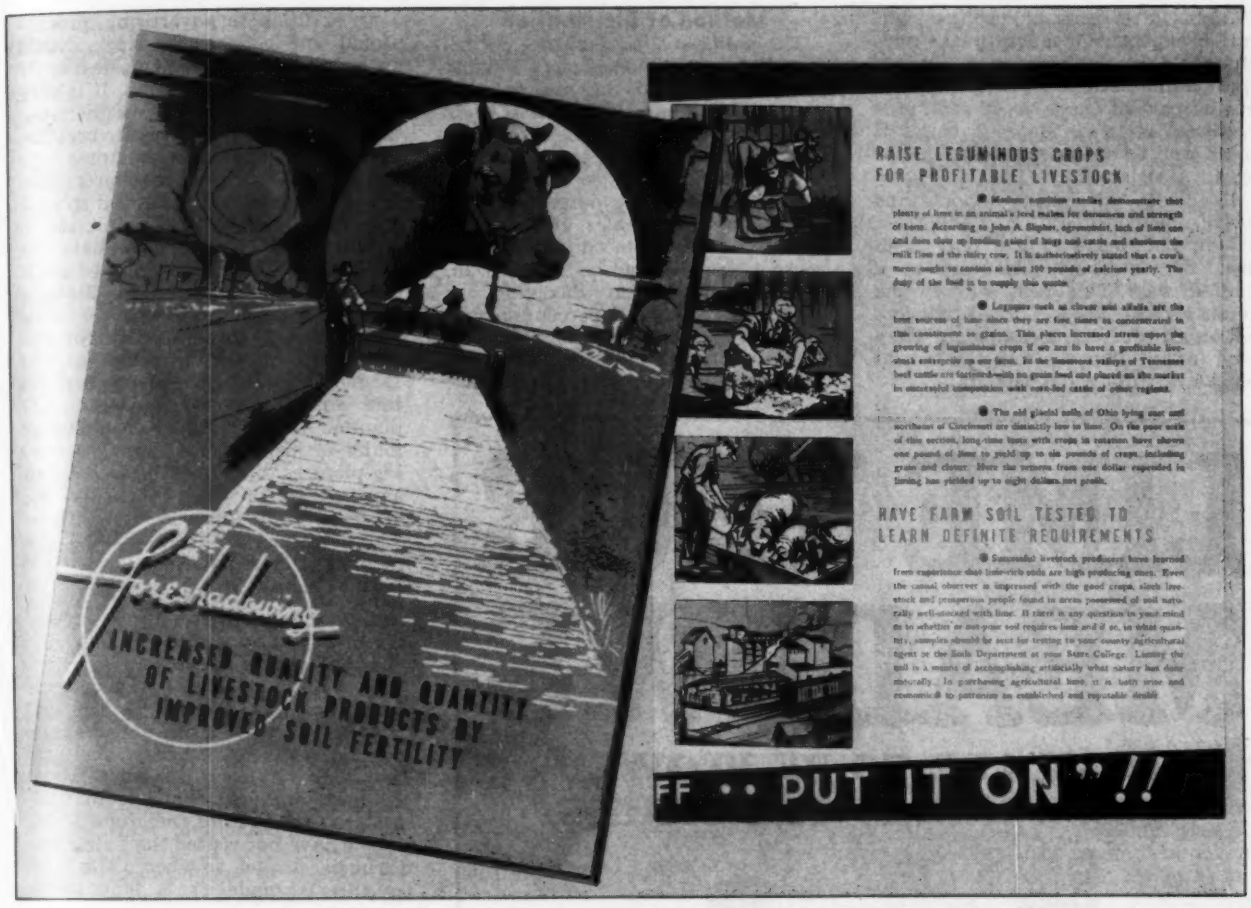
The third advantage of cooperative advertising is that advertising agencies can prepare and arrange the advertising so that it is attractive and carries the message in an appealing manner. For a small producer the cost of having an agency is high, but, in a cooperative program, the advantages of an agency may be had at very little additional cost.



Attractive folder furnished by Carbon Limestone Co., to keep chapters on better farming practices

Use Colored Posters

The Ohio Processed Limestone Association, in its advertising program, has used three posters and small stickers. "Lime Meadows" was selected as the theme because, by getting farmers to apply limestone on meadows any time after the hay was cut, it would create a more uniform demand throughout the year, thus spreading sales over more months than had been customary. When posters are used, they should be fairly sizable and arranged so that they may easily be read. There should not be too much printing. Posters printed in two or three colors are more attractive and are to be preferred to



Attractive promotional pamphlets distributed by Carbon Limestone Co., to show the advantage of liming materials in the raising of livestock

black and white. The first poster prepared in the Ohio program was entitled "Lime Your Meadows." This was followed by another with three photographs, illustrating the application of limestone in the summer, fall and winter. The third was entitled "Lime Pastures and Meadows." These posters were very effective and accomplished at least in part, what they were intended to do. Only the name of the association was printed on the posters.

To vary the program in 1944 we used small stickers which measured about two by three inches. These were printed on yellow paper with red ink. They had glue on the back and could easily be attached to letters. The message was "Lime Meadows," giving three advantages. Two hundred thousand were printed. Individual companies used them on letters to their dealers and on replies to inquiries from farmers. They did not have any company or association name on them, and therefore could be used by government groups. The association furnished them to all county agricultural agents and Agricultural Adjustment Administration offices in the state. The agronomy department likewise used them. The theory of using the stickers was that by seeing "Lime Meadows" often enough, the dealers would begin to advocate this practice to their customers and eventually some would try it.

Small leaflets of two, four or six pages are very desirable to use. To make them most effective they should be illustrated with good photographs. The pictures used should be of farms and crops from the territory in which sales are made and advertising used. The message can be general in nature or cover specific uses on certain crops. A series of folders could be used discussing the application of agricultural limestone on alfalfa, sweet clover, soy beans, clover and pastures. They should be mailed prior to the time of seeding these crops. On advertising of this kind which is prepared by an association, the back page can be left blank so the company can print its name, analysis of its product and other information pertaining to the company.

Some years ago I started a series of chapters on liming. Each chapter had to do with some specific farm crop and the use of agricultural limestone. A suitable cover was sent with the first mailing in which the following chapters could be preserved for future reference. Two mailings are made each year in March and July. The information contained in these is taken from experiment station bulletins. They are arranged to be brief and to the point and do not take long to read. Some of the titles used are: Legume Seeding with Oats and Wheat; How to Increase Production Without Increasing Acreage; Liming Meadows on Kohler Brothers Farm; Grazing and Care of Permanent Pastures; Legumes as a Source of Nitrogen; Profitable Farming by Soil Maintenance.

These chapters are mailed direct to farmers on our mailing list as furnished by our dealers. Because of the inquiries I have received, I know that the information is interesting to farmers, in addition to keeping our name before them.

I have done some advertising in daily and weekly newspapers and in monthly local farm papers. Best results have been with the weekly and monthly papers. It appears that the subscribers of these papers keep the last issue on the library table until the next issue. This results in everything being read, even the ads. Papers of this type do not have as large a circulation as others but seem to get to the people that use agricultural limestone.

Radio advertising is very good but rather expensive if much time is purchased. A small producer might use spot announcements to advantage during part of the year. If radio advertising is to be done, I think it could well be sponsored and paid for by an association.

Roadside advertising should be given some consideration. To the best of my knowledge it has only been used by limestone producers in a limited way. This past winter, the Ohio Hybrid Seed Corn producers put on an advertising campaign. They used large billboards well located on highways throughout the state.

Method of Distribution

The value of advertising is impaired if distribution is poor. It must get into the hands of, and be read by, those who are prospective users of the product. In the case of posters, rather than mail them to dealers and rely upon the dealers to do the posting, we put them up ourselves when calling upon the dealer. It is important that they be placed in the warehouse where they can be readily seen. My experience is that when they are mailed, only a small percentage are posted. The same is true of folders. I prefer to get a mailing list from the dealer and make the mailing direct.

The original poster was about 22 x 32 in., and was printed in blue and red colors

In addition to advertising, promotional and educational work should be done. One way of doing this is by moving pictures and slides. It is very easy to find places to show them. As an industry we are fortunate because, at farmers meetings, pictures are always in demand on their programs. The pictures can be arranged so that they will be of particular interest to certain groups. For example, have one set that pertains to the use of agricultural limestone on vegetables and how the application affects the market gardener. Have another for the dairyman and one for the general farmer. Interesting stories can be told in pictures of what a well-planned liming program has done for many farmers. In addition to showing pictures to adult groups, they can also be used for youth groups like the 4H clubs and Future Farmers. These young people of today will be the farmers of tomorrow.

Promotional Work

I have found that trips to an experiment station with dealers and outstanding farmers is an excellent way to promote the use of agricultural limestone. There the men can view the fertility plots and see side by side, plots on which agricultural limestone was used as well as those unlimed, and can compare the difference in growth of the crops. Many people have not visited their state experiment station, so when a trip such as this is made, it is long to be remembered.

In Ohio, The Processed Limestone Association is furnishing speakers for Farmers Institutes. These institutes are held in rural communities and the subjects discussed are of interest to farm families. The speakers are to talk about agricultural limestone and what it does. The information is furnished to the speakers by the agronomy department. They are not to discuss the different grades of liming materials or compare one company's product with that of another. The men selected as speakers are farmers, who are outstanding in their respective counties and who have had some experience in speaking to farm groups. All have used agstone liberally on their farms and can speak from first hand experience. The talks are not illustrated, but if they were, they would be more interesting. As this is the first time this kind of a project has been tried, the value of it can not be determined until later.

It is estimated that about 51,000,000 tons of agricultural limestone should be applied annually in this country. For the past few years, we have been using approximately 25,000,000 tons. With this potential market, the producers of agricultural limestone, individually and collectively, should plan a constructive advertising and promotional program to secure this additional business.

Spectrophotometric Determination of Titania in Portland Cement

By J. J. DIAMOND*

• A precise and accurate method is described for the determination of titania in portland cement. It involves fusion of the R_2O_3 obtained from the cement with $K_2S_2O_7$, solution of the melt in 1:9 H_2SO_4 and reaction with hydrogen peroxide to form a yellow to amber complex. The color intensity is measured spectrophotometrically, using a compensating blank technique to eliminate the interference due to the presence of iron and other coloring matter. Average deviations from the mean of 0.003 percent or less were obtained in multiple analyses by three chemists, of cements ranging in titania content from 0.17 to 0.33 percent.

TITANIA is one of the minor components of portland cement. Neither the present Federal specification[4] nor A.S.T.M. specification[5] for the analysis of cement contains any method for its determination. The present investigation is an attempt to establish a precise and accurate procedure for the determination and to obtain some data on the amounts of titania that occur in typical cements.

Of the several methods available, the colorimetric method involving the use of hydrogen peroxide[5,8,10,12,13] has been selected because of its relative simplicity and adaptability to rapid and precise work, using the Coleman Universal Spectrophotometer.

Nagerova and Lebedeva[11] have proposed a method for the determination of titania in white portland cement which involves the use of phosphoric acid to bleach the color due to iron, and the measurement of peroxidized titanium color complex in a photoelectric filter photometer, using distilled water as a reference liquid. Maffei[9] has proposed a method involving reaction of the cement with a sulfuric-nitric-phosphoric acid mixture, filtration, and addition of hydrogen peroxide to an aliquot. The color obtained is matched against solutions containing known amounts of titania and the same amounts of peroxide and acid mixture as the cement solution.

The proposed method involves the isolation of the R_2O_3 from the cement, its fusion with $K_2S_2O_7$, the solution of the melt in 1:9 H_2SO_4, the addition of hydrogen peroxide to an aliquot to develop the peroxidized titanium color and the measurement at the wave length of maximum absorption of the color intensity, using a Coleman Universal Spectrophotometer, and the compensating blank method[6,10]. The preliminary precipitation of the titania with the R_2O_3 was adopted for several reasons. First, the R_2O_3 is often determined in the routine analysis of cement; the proposed procedure can, therefore, easily fit into the regular scheme of analysis. Second, the method can be applied to most silicate and carbonate materials since the R_2O_3 obtained from them is similar in character to that obtained from cement. A photoelectric instrument is being used in preference to a visual comparator because experience has shown that personal factors severely limit the accuracy of the latter, even in the hands of those with moderate experience in its use.

Using the proposed procedure, the average analyst can isolate the R_2O_3 from six samples of cement in a day. The determination of their TiO_2 contents can then be completed in about three or four hours, including one or two hours during which the analyst's attention is not required.

Apparatus

The instrument used in the proposed method is a Coleman Universal Spectrophotometer, Model 11, having a fixed slit width of 35 millimicrons. Essentially monochromatic light is produced by means of a grating and auxiliary filter, and the light transmitted by a solution is measured photoelectrically. The instrument is used with matched square cuvettes having a light path of 13 mm., and an 8-volt storage battery as a power source. The use of round cuvettes which do not fit snugly in the carrier, even though matched, is not recommended. Serious and annoying errors result from the fact that the tubes must be kept oriented in one direction and tend to rotate on being shifted back and forth for multiple check readings. The transmission will also vary with the exact positions of the cuvettes in the carrier. Neither of these errors appears when matched square cuvettes are used.

A 40 ml. pipette should be used. This size permits two aliquots to be taken from a 100 ml. volumetric flask, leaving enough extra solution for waste and the proper rinsing of the pipette. Each aliquot is sufficiently large to permit rinsing the cuvettes thoroughly and filling them at least half full, for the reading. The more easily obtained 20 ml. pipette could be used twice, of course, if desired.

Reagents

Use the 30 percent hydrogen peroxide solution and keep it refrigerated to minimize deterioration.

Use National Bureau of Standards Sample No. 154, Titanium Oxide (98.7 percent TiO_2) and make up a standard solution containing about 1 mg. per ml. by heating a suitable amount with an $(NH_4)_2SO_4$ and H_2SO_4 mixture, as described in the Provisional Certificate of Analysis accompanying the Standard Sample.

Procedure

Separation of R_2O_3.—Using a stirring rod, thoroughly grind together 0.5000 g. cement and 0.5 g. NH_4Cl[2] in a 50-ml. beaker. Cover with a watch glass and carefully add 5 ml. concentrated HCl. Add two drops concentrated HNO_3 and stir to aid decomposition. Heat on the steam bath for about 30 minutes and stir occasionally to get complete decomposition of the cement. Filter through a 9-cm., medium retention filter paper, wash ten times with hot 1:99 HCl and five times with hot water. Burn off the paper in a platinum crucible and treat the silica with 5 to 10 ml. HF and a few drops of 1:1 H_2SO_4. Fume off the silica, HF and H_2SO_4 completely. Reserve the HF residue. Bring the filtrate from the silica to a boil, add methyl red indicator and precipitate the R_2O_3 with NH_4OH. Filter hot through a 9-cm. medium retention filter paper and wash ten times with hot 2 percent NH_4Cl solution (slightly alkaline to methyl red). Burn off the paper in the crucible containing the HF residue from the silica.

$K_2S_2O_7$ Fusion—Recommended—To the R_2O_3 obtained as above, or by any other suitable procedure, add 5 g. $K_2S_2O_7$ and fuse over a low flame until solution is complete. Cool, separate the melt from the crucible and transfer it to the beaker in which the R_2O_3 was precipitated. Wash the crucible and lid with hot water, using a policeman, and add the washings to the beaker. Add 10 ml. concentrated H_2SO_4 and some water, cover, and digest on the steam bath with occasional stirring until the solution is clear. Cool to room temperature, pour into a 100 ml. volumetric flask

*National Bureau of Standards, U. S. Department of Commerce, Washington, D. C.

and dilute to the mark with water.

Na_2CO_3 Fusion—Optional — If the presence of interfering amounts of V, Mo, P or As is suspected, this procedure should be used. Add 5 g. Na_2CO_3 to the R_2O_3, fuse for 10 to 15 minutes, cool, separate from the crucible and transfer to a small beaker, and wash the crucible with hot water, using a policeman. Digest the melt and washings until the melt is completely disintegrated. Then filter through a 9-cm. medium retention filter paper and wash a few times with 2 percent Na_2CO_3 solution. Discard the filtrate, burn the paper and residue in the platinum crucible, fuse with 5 g. $K_2S_2O_7$ and then proceed as recommended above.

Colorimetric Comparison—Recommended—Pipette two 40 ml. aliquots into clean dry beakers. From small burettes add 0.5 ml. 30 percent H_2O_2 to one and 0.5 ml. H_2O to the other. Mix each well. Rinse one cuvette several times with the colored solution and fill it about half full. Use the reference solution to similarly rinse and fill the other cuvette. Care should be taken to wipe the outside of the cuvettes perfectly clean and dry before placing them in the cuvette holder. As a matter of routine, the same cuvette should always be used for the reference solution, the cuvettes should always be oriented in the same direction and they should not be interchanged in the cuvette carrier. Place the unperoxidized "compensating blank" solution in the light path and set the instrument to 100 percent transmittancy at a wave length of 410 millimicrons. Then substitute the peroxidized solution and observe the percent transmittancy to 0.1 percent. Read the TiO_2 equivalent from the calibration curve and divide by the sample weight to get the percentage of titania.

Calibration—Make up a standard titanium solution containing about 1 mg. per ml. of TiO_2, as described under "Reagents." Using a burette, add accurately measured volumes of standard titanium solution to ten 100-ml. volumetric flasks to give a series of standards containing 0.50 to 5.00 mg. in increments of 0.5 mg. Add to each a solution containing 5 g. $K_2S_2O_7$ and 10 ml. concentrated H_2SO_4 and dilute to the mark with water. Take two 40 ml. aliquots of each solution, add 0.5 ml. 30 percent H_2O_2 to one and 0.5 ml. water to the other. Observe the transmission of the colored solution using the colorless solution as a reference. Multiple determinations should be made for greater precision. Plot on semilogarithmic paper to obtain a graph similar to that shown in Fig. 1. It should be noted that the curve obtained is almost but not quite a straight line.

Colorimetric Comparison—Optional —Place a mark on the 100 ml. volumetric flask at the 70 ml. level. After the sample has been diluted to the 100 ml. mark, use exactly 30 ml. to rinse the reference cuvette and fill it with solution, pouring off any of this 30 ml. which is not used. To the 70 ml. remaining in the flask add 1.00 ml. 30 percent hydrogen peroxide and rinse and fill the other cuvette with the resulting solution. Observe the percent transmittancy as described above and read the percent TiO_2 from a curve constructed using this optical procedure. The method is nearly as precise as the recommended procedure. Since the color due to the iron, etc., is diluted in the peroxidized solution to 70/71 of its value in the reference solution, a small negative error in the TiO_2 value results. The error varies with the amount of iron and other coloring materials present, and corresponds to about —0.002 percent for a cement containing about 5.0 percent Fe_2O_3. The advantage of this procedure is its great speed and simplicity.

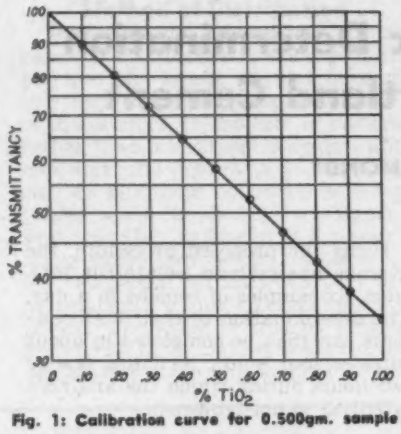


Fig. 1: Calibration curve for 0.500gm. sample

Discussion

Interferences—If present in a cement analyzed according to the recommended procedure, V and Mo would react with H_2O_2 to give colored complexes; and P and As would tend to bleach the Ti complex. From the results shown in Table 1, of parallel analyses of typical cements, involving fusion of the R_2O_3 with Na_2CO_3, and with $K_2S_2O_7$, it is evident that there is normally little or no interference from these sources. The alternate procedure has been provided for use when the presence of significant quantities of P, As, V and/or Mo is suspected. The compensating blank technique has been incorporated into the procedure to eliminate the interference due to iron and other colored ions that accompany the R_2O_3 and the color of whose solutions is not affected by the addition of hydrogen peroxide. Most ordinary portland cements contain about 2 to 6 percent of Fe_2O_3.

Effect of Reagent Concentration—Lange[7] states that one ml. of 30 percent H_2O_2 added to 100 ml. of solution will give maximum color development up to the solubility point of the titanium complex. An excess of peroxide does not affect the color. Experiment has shown that for the average portland cement containing about 0.25 percent TiO_2, a minimum of 0.2 to 0.3 ml. 30 percent H_2O_2 per 100 ml. of solution is required for full color development. An excess of peroxide is used in the proposed procedure to guard against incomplete color development due to deterioration of the reagent.

Reaction Time — Numerous trials have demonstrated that the formation of the colored titanium complex is completed practically instantaneously. Maximum color development was never found to take more than the minute or two required for manipulation before a reading could be taken. Ayres and Vienneau[5] have found that the color is stable, within the limit of error of the colorimeter they used, for a period of two years.

Precision and Accuracy—The proposed method gives results which are quite precise, as indicated by the results obtained in multiple analyses of typical cements by three analysts, two of whom were using the spectrophotometric method for the first time (see Table 1†). These results are in marked contrast to the precision obtained in the colorimetric method of Maffei[3]. The results he reports for analyses by five chemists of three cements averaging 0.16, 0.19 and 0.26 percent TiO_2 show average deviations from the mean of 0.004, 0.024 and 0.018 percent, respectively.

To get some measure of the ac-

(Continued on page 124)

†Part of the analyses reported in Table 1 were made by Leonard Bean and Richard B. Peppler, of the staff of the National Bureau of Standards.

TABLE 1. PRECISION OF RESULTS

Cement	Flux	Number of determinations	% TiO_2 Max.	Min.	Mean	a. d. the from mean
1	Na_2CO_3	3	0.164	0.160	0.163	0.0017
	$K_2S_2O_7$	3	.170	.164	.167	.0023
2	Na_2CO_3	3	.187	.180	.184	.0027
	$K_2S_2O_7$	6	.191	.184	.188	.0025
3	Na_2CO_3	3	.250	.241	.245	.0030
	$K_2S_2O_7$	3	.251	.248	.249	.0013
4	$K_2S_2O_7$	5	.174	.166	.168	.0020
5	$K_2S_2O_7$	3	.205	.205	.205	.0000
6	$K_2S_2O_7$	5	.250	.245	.246	.0014
7	$K_2S_2O_7$	5	.338	.327	.333	.0022

New Ways of Using CEMENT

American Concrete Institute Convention Hears About Recent Progress

THE FIRST REAL convention of the American Concrete Institute since early in the war was held in Buffalo, N. Y., February 18-21. The attendance exceeded expectations and all sessions, morning, noon and night, were attended by very much interested members and guests. An overall estimate of the proceedings might be summarized in stating that during the war, if not a result of the war-time construction, some practices were established in the use of concrete which should greatly extend its use into fields hitherto untapped.

Concrete Floor Units

F. N. MENEFEE, chairman, Committee 711, offered the report of his committee on "Proposed Minimum Standard Requirements for Precast Concrete Floor Units." The report was adopted unanimously. These standards are important to concrete products manufacturers who make concrete floor units, as they will undoubtedly be accepted as standards for many city building codes. The report was published in full in the January, 1946, *Journal* of the Institute. The most important provisions to the manufacturer are probably those relating to curing the product.

The minimum amount of curing of precast units consists of keeping the concrete moist at least 7 days, if made of normal portland cement, and for at least 3 days if made of high early strength cement. For each increment of 5 deg. below 70 deg. F. in average curing temperature, these curing periods must be increased by 4 days for units made of normal portland cement and by 2 days for units made of high early strength cement. This means, for example, if the curing temperature is 60 deg. F. the unit made of normal cement would have to be moist cured 15 days and one made of high early strength cement 7 days. The average curing temperature in no case is to be less than 50 deg. F.

Concrete Design Methods

Practically all of one afternoon session was devoted to new developments in concrete design methods, led by A. J. BOASE, manager of the structural bureau, Portland Cement Association. Some of the papers presented were of much interest to manufacturers of cement and concrete products in showing the expanding horizon for concrete. For example, JOHN R. NICHOLS, consulting engineer, Boston, Mass., discussed "Radiant Heating by Reinforced Concrete." The title, he said, is largely a misnomer, for the heating is not what is usually described as "by radiation," but is merely the warming of floors, walls and ceilings by means of circulating warm-water piping embedded in the floors, walls and ceilings. As concrete is usually the material in which the heating pipes are embedded, it is necessary to know what the heating does to the concrete or plaster.

Mr. Nichols said that city building codes at present are hostile to this kind of heating and the code writers have various theories to discourage the practice. The A.C.I. has a committee studying the problem. If no deterioration of the concrete is caused, this fact probably would prove it to be an efficient and popular method of heating buildings because they can be made comfortable without the use of excessively hot, small heating units.

From the discussion it developed that there are some difficulties in the installation of radiant, or more accurately, "panel" heating. Corrosion of the piping and damage to the encasing concrete comes from escaping moisture, and hence welded piping is better than coupled pipe. Vapor heat with circulating warm water is not recommended. The most feasible heating element is warm air. The method was used in ancient Rome and has been tried in England since 1909, but is not yet perfected.

Air-Entraining Concrete

A night session which lasted long and involved much discussion was on the ever popular subject of "Entrained Air in Concrete," led by F. H. JACKSON, principal engineer of tests, Public Roads Administration. The subjects included the use of air-entraining concrete in ready-mixed concrete operations, in concrete products, in highway and airport paving, and in structural concrete generally. It developed into a meeting composed almost entirely of relating experiences endorsing the use of air-entraining agents for any and all kinds of concrete. If there were any dissenters they were not very vocal. The only difference in opinion was whether to have the air-entraining agent ground into the cement or introduced at the concrete mixer.

C. E. WUERPEL, engineer in charge, Central Concrete Laboratory, North Atlantic Division, U. S. Corps of Engineers, one of the earliest advocates of air-entraining concrete, and still one of its staunchest advocates, summarized a paper "Laboratory Studies of Concrete Containing Air-Entraining Admixtures," which was published in full in the February, 1946, *Journal* of the Institute. The same author had a paper in the September, 1945, issue of the *Journal* on the "Field Use of Cement Containing Vinsol Resin."

After describing the virtues imparted to concrete by air-entraining agents, Mr. Wuerpel gave the following precautions in regard to the use of air-entraining agents: "The entrainment of air is not likely to increase in concrete mixtures by continued mixing in stationary or paving-type mixers beyond a period of about three minutes, when the admixture is added at the mixer. Continued increase in air with prolonged mixing is likely to occur beyond this period when admixtures are interground with the cement at the mill.

Mr. Wuerpel concluded: "The air content of concrete resulting from the use of air-entraining admixtures should be considered as a definite ingredient, and the design of mixtures should be based on ingredients of water, *air*, cement, fine and coarse aggregate. In view of the benefits to be derived from mixtures of air-entraining agents, accelerators, and gas-generating agents, and the regulability of effect achievable by such use, the admixture should be added to the concrete mixture in the field at the batching plant or mixer. The addition of the admixture should be made by mechanical batchers which will dispense the material in accurate and regulable amounts."

The first witness to the advantages of air-entrained concrete for highway pavements in the Northeastern States was LEE ANDREWS, engineer, Portland Cement Association. Experimental sections put down in 1939-40 were inspected in 1944 and observed to be in excellent condition, while scaling was in evidence on adjacent sections where ordinary concrete had been used. During the war air-entraining concrete was much used for paving of air ports and for structural concrete. Since the end of the war specifications of nearly all the state highway departments in the Northeast have included the use of air-entraining concrete—made generally with air-entraining cements. There are some instances where too much air was entrained, but the experience as a whole has been very favorable, reducing the amount of water required in the mix and increasing the resistance to weather-

(Continued on page 116)

Mining Engineers Meet in Chicago

Industrial Minerals Division of the A.I.M.M.E. meetings cover interesting developments in prospecting, mining, and processing

A NUMBER of papers of direct interest to producers of non-metallic minerals were presented in sessions of the Industrial Minerals Division at the annual meeting of the American Institute of Mining and Metallurgical Engineers held in Chicago, February 25-28. In addition there were papers read at the Milling and Mining Division sessions, and in joint sessions, of practical value for producers of industrial minerals which will briefly be abstracted herein.

Phosphate

Two papers on the beneficiation of phosphates were presented before a joint session of the Milling Methods and Industrial Minerals Division meeting. In one, "Effect of Various Flowsheets on the Efficiency of Phosphate Recovery at the Peace Valley Plant," I. M. LeBaron, chief of ore-dressing, International Minerals and Chemical Corp., discussed the weaknesses in the plant built in 1942 for the concentration of phosphate fines, and the changes made based upon experiences, with comparative results. Reagent costs were high and recovery low in the original layout, a great deal of the values being wasted with the tailings in the phosphate-silica flotation.

Changes involved adding another stage in flotation, a two-stage addition of reagent, an increase in hydroseparator capacity, and other revisions, to increase recovery to 85 to 92 percent and cut reagent cost by one-half. Much of the minus 100-mesh and coarser values were being lost over a 75-ft. diameter hydroseparator, resulting in installation of one 150 ft. in diameter.

Mr. LeBaron, who is familiar with the process of electrostatic separation of siliceous particles from phosphate substituted for H. B. Johnson, vice-president, Ritter Products Corp., in a presentation, "Electrostatic Concentration of Phosphate Rock." According to Mr. LeBaron the installation at the American Agricultural Corp., in Florida, is very effectively concentrating phosphate at the rate of 25 t.p.h., the process being used in preference to double flotation. A fatty acid float is followed by electrostatic separation in the removal of silica impurities. One observation made was that the process is most effective with a reagentized feed.

Prospecting for Non-Metals

A joint session with the Mining Geology Committee was held on Wednesday, February 27 at the Morrison Hotel with B. C. Burgess and James A. Barr as associate chairmen. Mr. Barr, who is chief engineer, International Minerals & Chemical Corporation, outlined briefly the subject under discussion, and introduced the speakers.

H. O. PICKARD, JR., assistant manager, Hoover and Mason Phosphate Co., described the machine prospecting methods used by his company. He described an augur with a cutting bit on the end which is used for drilling in dry strata. In wet strata, a 3-ft. tube is used at the end of the "string" with a fish tail cutting tool and spiral. It is built in sections of 10 ft. Up to 100 ft. is drilled this way.

H. R. JOHNSTON, chief, River Channel Improvement Division, T.V.A., described T.V.A. diamond drilling practices. He told about the satisfactory use of borium metal tips on bits where fragmentary chert is encountered. Borts are wiped out under these drilling conditions.

I. M. LEBARON, chief, Ore Dressing, International Minerals & Chemical Corporation, told about the use of a new type core barrel in Florida. Mr. Le Baron explained that in the Florida phosphate field under discussion there is about 15 ft. of matrix with 15 ft. of overburden which may be described as a clay-sand swamp. Largest particles are about 1½ in. in the matrix. Various equipment was tried but hand-operated auguring was found to be expensive. Casings were used and also a 9-ft. core barrel. The company now uses a power-driven augur bit. Four-inch holes are sunk with a drill rig, similar to those used in oil drilling, and a 2½-ft. core barrel is employed.

J. L. GILLSON, geologist, E. I. du Pont de Nemours & Co., Inc., was not present, but his paper was read by James Barr, Jr., of Armour & Co. This paper, "Prospecting in Sands," told about the methods used where water was encountered to obtain a representative, uniform sample. The customary methods are employed in drilling to the water table. When water is encountered, a ¾-in. syphon pump is used. This can be used to a depth of 10 ft. When a greater depth is required, heavier pumping equipment is necessary.

In the absence of G. Townsend Harley of International Minerals & Chemical Corporation, his paper, "Prospecting for New Mexico Potash," was read. He told how the potash deposits were discovered from oil well drill prospecting by the government. Slides showed the strata in which potash was found. For prospect drilling to 1000 ft., a rotary rig with 2½-in. core in 20-ft. sections is used.

B. N. MILLER of Mexico Refractory Clay Co., described the prospecting methods used by his company, illustrating the pattern of drilling with numerous slides.

Fluorspar

In another session, W. E. Duncan, metallurgical engineer, Mahoning Mining Co., described the concentrating operations of his company at Rosiclare, Ill., in the recovery of lead, zinc and fluorspar from lead-zinc sulfide ores. Tailings from the lead flotation circuit are put through a circuit for zinc recovery to eliminate fluorspar. Interlocking of the ores prevents release by grinding and an 80 to 85 percent fluorspar, with silica and lime impurities, is recovered and marketed as metallurgical grade.

Graphite

One other paper in this session, "Treatment and Concentration of the Graphite Ores of São Fidelis, Brazil," technical publication No. 2012, by F. C. von der Weid, consulting engineer, Rio de Janeiro, Brazil, discussed the occurrence of graphite ores, uses and concentration processes. The fibrous variety at São Fidelis is most suitable for making refractories, but the principal purchasers are foundry plants and paint manufacturers, there being no refractory manufacturers. After study of concentration processes, a flowsheet was designed involving dry milling, air classification and dust-collection with flotation of the coarse products of the milling.

Limestone Mining

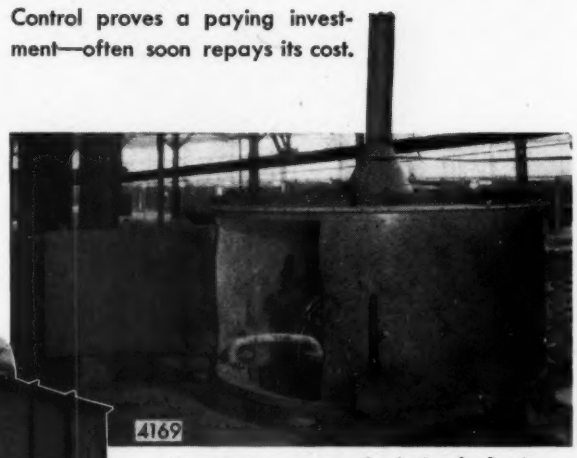
One paper, "A New Caving Procedure at the Crestmore Limestone Mine," technical publication No. 1766, by R. H. Wightman, mine superintendent, Riverside Cement Co., California, presented at a session on general mining methods was of interest to the rock products industry.

A detailed description of the mine was given in U. S. Bureau of Mines, Information Circular No. 6795, in June, 1934, this paper covering the ninth block to be caved. The paper was illustrated with plans and sectional elevation drawings.

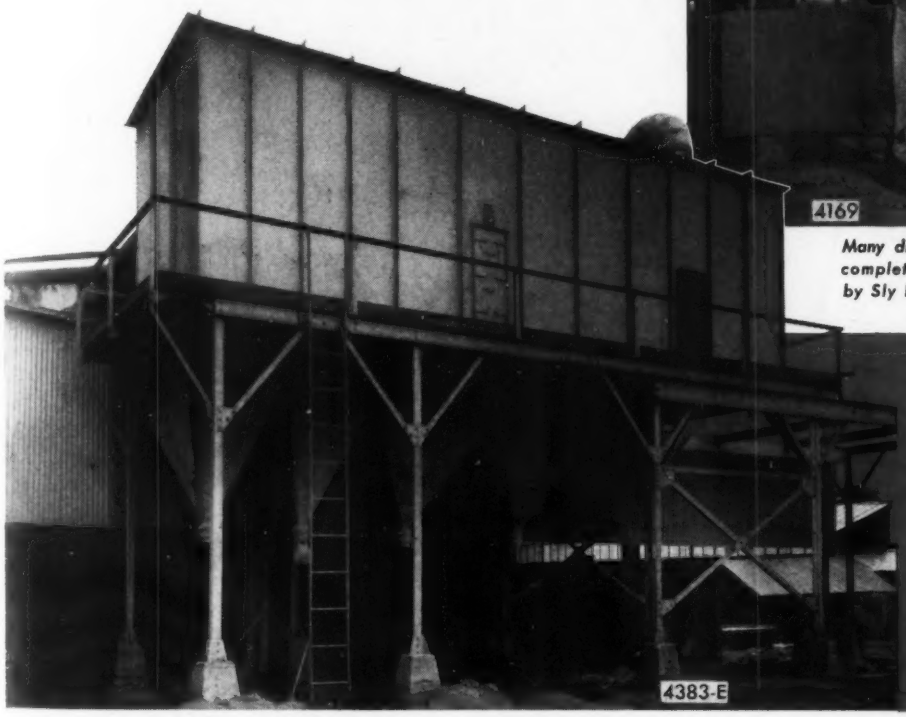
(Continued on page 120)

SLY DUST CONTROL
A Paying Investment

Throughout the rock products field Sly Dust Control Systems are saving thousands of dollars yearly—by improving working conditions, eliminating health hazards, prolonging the life of machinery, reducing cleaning and maintenance costs, and recovering valuable materials. Because of these savings Sly Dust Control proves a paying investment—often soon repays its cost.



Many dry pans are made dustless by housing completely, as shown, and all dust collected by Sly Dust Filters (illustrated in top view.)



Sly Dust Collectors get all the dust by filtration through cloth. The Collector shown here filters silica dust out of 15,000 cu. ft. of air per minute.

Ask FOR BULLETIN 98

Ask for Bulletin 98, a 20-page illustrated publication giving important information about dust control and the advantages of the Sly method.

5 SLY SUPERIORITIES

1. Greater filtering capacity because of more filtering cloth.
2. Taut bags (patented) save power and improve dust removal.
3. Bags more easily replaced.
4. Automatic control (any degree) minimizes or entirely removes the human factor.
5. Simpler shaker mechanism results in savings in maintenance and operation.

THE W. W. SLY MFG. CO.

4746 TRAIN AVENUE • • CLEVELAND 2, OHIO

INTERNATIONAL

This emblem identifies the nation's largest company-owned truck-service organization—International Branches—and International Truck Dealers everywhere.

5 Reasons Why
INTERNATIONAL SERVICE
Can Help You Meet Rising Truck Operating Costs

1. Mechanics who furnish International Service are *truck* mechanics—specialists in truck service.

2. They are trained in International shop methods.

3. They are kept constantly informed of all improvements in maintenance and service practices.

4. They use International-approved equipment for analysis and testing.

5. They install International factory-engineered parts.

International Truck Service is supplied by a national network of International Truck Dealers and by International Branches—the nation's largest company-owned truck-service organization. It is available for trucks of all makes and models.

In the present critical truck situation, International Truck Service is your best bet to keep operating costs at practical levels and to minimize chances of highway failures. You will find an International Branch or Truck Dealer within easy driving distance. Get in touch with him today.

Listen to "Harvest of Stars" every Sunday. NBC Network

Motor Truck Division
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

INTERNATIONAL

INTERNATIONAL *Trucks*

NO JOB TOO TOUGH FOR A

RUGGED BWH CONVEYOR BELT!

Over 15,594 tons of copper ore daily . . . for 2,256 days . . . that's the record of a Bull Dog Conveyor Belt in one of America's great copper mines.

That, the operators told us, is a record to be proud of! But, our records show that similar dependable service is being rendered by other BWH belts in all types of industry from coast to coast . . . and at lower maintenance cost. Such ruggedness is due to the exclusive BWH ROTOCURE process of continuous vulcanization.

The dependability of BWH for producing conveyor belts and other products of remarkable toughness has established it as a leader in the industrial rubber goods field. So depend on BWH for dependable ruggedness . . . on BWH distributors for dependable service.

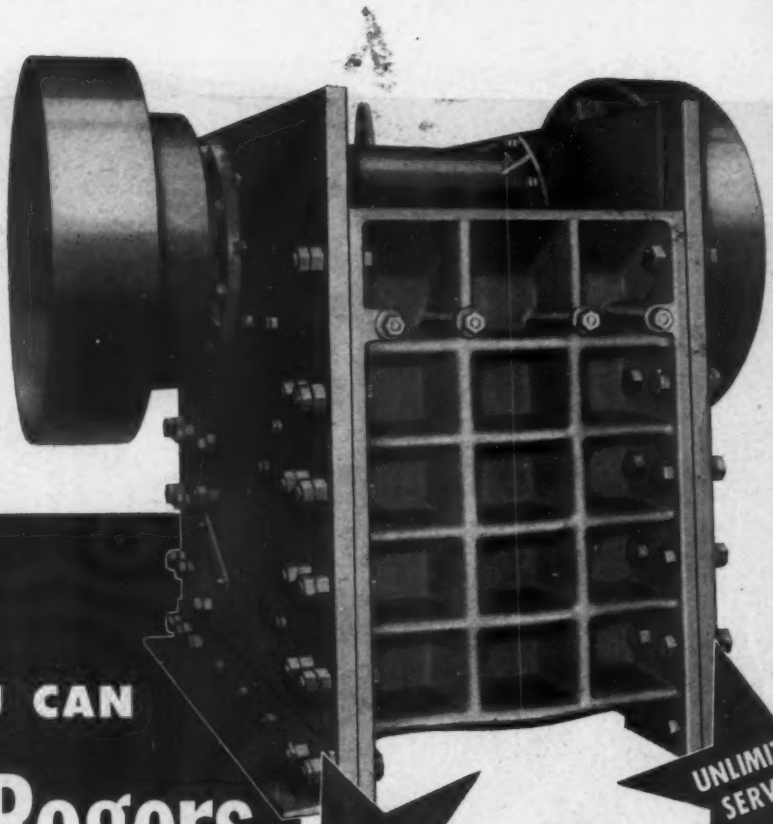
HAVE YOU A JOB WHERE STAMINA COUNTS?

Bring us your toughest problems . . . we're specialists in solving them. Consult your nearest BWH distributor, or write to BWH direct.

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in All Principal Cities

WORKS: CAMBRIDGE, MASS., U. S. A. • P. O. BOX 1071, BOSTON 3, MASS.



WHY YOU CAN

Rely on Rogers

JAW CRUSHERS

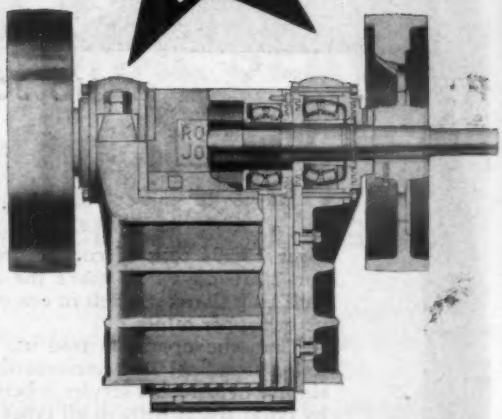
MORE CAPACITY

GREATER STRENGTH

UNLIMITED SERVICE

Oversize bearing and shaft diameters—from two to three sizes larger than normally used—are a big reason why *there has never been a bearing or shaft failure in a Rogers Jaw Crusher* and why Rogers Crushers have a greater rock reduction capacity. The Rogers line of Jaw Crushers is complete, in 16 sizes from a small reduction to a large primary crusher with large jaw opening.

Rogers Rock Reduction machinery for crushing, sizing, conveying and storing has a reputation for reliability, strength and precision performance that has made Rogers a name for economical and efficient operation all over the world. For a single unit or a complete plant, you can always "Rely on Rogers".



The heart of the Rogers Jaw Crusher—oversize shaft and anti-friction bearings. (Also available with bronze bearings.) Write for complete descriptive bulletin today.

ROGERS IRON WORKS CO.

JOPLIN, MISSOURI

Quarry Plants • Gravel Plants • Jaw Crushers • Roll Crushers • Belt Conveyors • Bucket Elevators • Screens • Feeders • Steel Bins

MANHATTAN CONVEYOR BELTS are Built to Last . . .

Wherever production requires efficient moving of material, belt conveyors do the job most economically. Whenever production is impaired by break-downs of conveyor belts, many mine and quarry operators call on Manhattan. For more than 50 years Manhattan engineers have been solving troublesome conveyor belt problems and incorporating new and unusual features in Manhattan engineered belts for difficult jobs.

In developing the best rubber belts for conveyors, Manhattan engineers have combined scientifically compounded Flexlastics with specially designed Strength Members in the belt body, to make Manhattan Conveyor Belts stronger, longer lasting, yet more flexible around end pulleys and in troughing idlers.

The Manhattan 54" Conveyor Belt designed for the huge traveling stacker shown above, was built to deliver 800 tons of overburden per hour on a 190' boom. Baked by summer sun, glazed by winter ice, it stands the gaff the year around, as do all Manhattan belts.

All Manhattan Conveyor Belts are mildew-proofed. Oil-proof belts are also available.

Look into the engineered Homocord construction and other Manhattan features that consistently show "lower costs per ton" on service record cards.

The term Flexlastics is an exclusive Manhattan Trade Mark. Only Manhattan may make Flexlastics

Other MANHATTAN Condor PRODUCTS for Mines, Quarries and Construction Jobs

- Air, Steam, Water Hose
- Suction Hose
- Fire Hose
- Dusting Hose
- Oil Spray Hose
- Transmission Belting
- V-Belts
- Conveyor Belts
- Elevator Belts
- Chute and Launder Lining
- Engineered Molded Products
- Mine Trolley Wire Guard
- Flexible Rubber Pipe
- Rubber-Lined Pipe
- Vibration Dampeners
- Brake Blocks and Lining, Clutch Facings
- Abrasive Cutting and Surfacing Wheels

RAYBESTOS-MANHATTAN, INC.

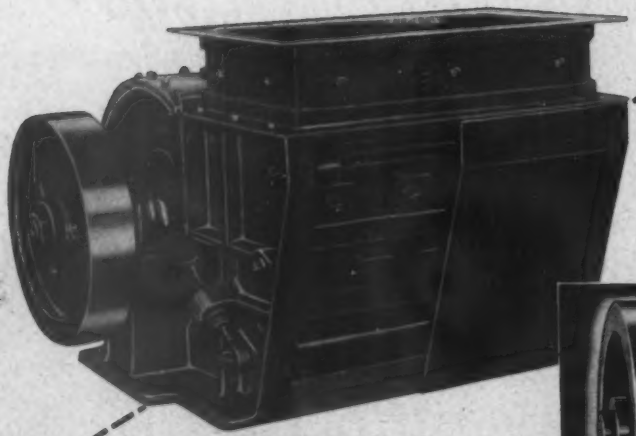
MANHATTAN RUBBER DIVISION

EXECUTIVE OFFICES AND FACTORIES PASSAIC, NEW JERSEY

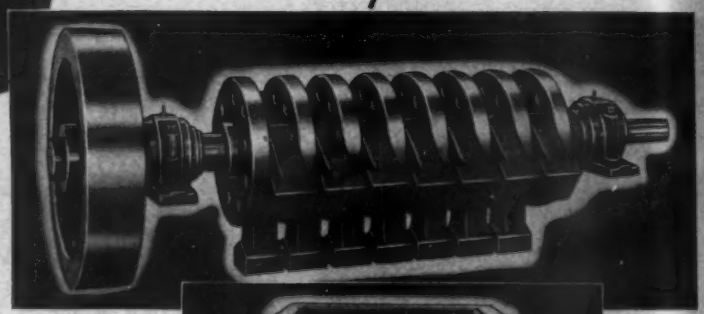
FLEXIBILITY

plus UNIFORM REDUCTION

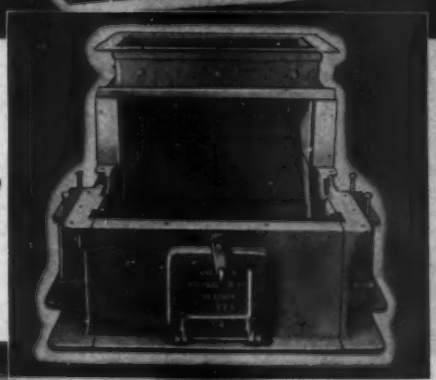
MINIMUM HEAD ROOM REQUIREMENT
EASY RELOCATION

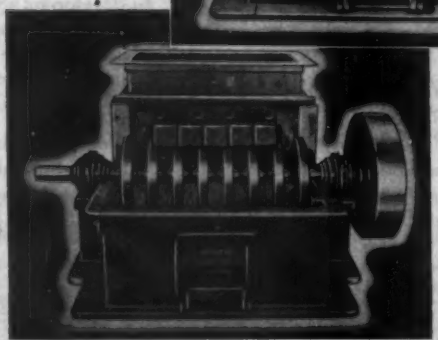


American Hammermill with front plate removed



Massive cast steel rotor — with manganese swing hammers —on heavy alloy heat treated steel shaft, mounted on SKF spherical roller bearings, in dust-tight grease-lubricated pillow blocks.





Crushing chamber is manganese lined with manganese breaker and grinding plates. All housing joints are machined and dust-tight.

American's sectional construction permits easy dismantling and relocation to follow the operation. Note compactness for minimum headroom.

AMERICAN HAMMERMILLS add great flexibility, and at the same time, increase output on any size of operation. Americans are quickly and easily adjusted to different sizing, from roadstone or agstone for year 'round seasonal requirements.

Accessibility and adjustability are important features of American design. Americans are custom-built to fit any type of operation. Wetness or hardness of product are problems overcome by American Hammermills.

Americans assure high tonnage with a uniform product in closed circuit or one-step operations.

Available in capacities from 5 to 250 TPH.

Get American's special bulletin on "Crushing".

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1245 MACKLIND AVE.
ST. LOUIS 10, MO.

A cargo 5 million years old . . .

AND NEW MACK TRUCKS!

When the Pacific waters receded and the California coastline was formed, what had once been the floor of a calm bay was bared to the sun and air . . . and there lay a deposit of diatom, five miles square, 1400 feet thick—located at what is now known as Lompoc, California!

From this diatomaceous earth, now known as Celite, the Johns-Manville Company has been manufacturing everything from match heads to plastics and paints, and the entire gamut of insulation and filtration materials.

These products have added to better living. They were developed through unending research and years of hard work. So also the Macks that transported this Celite are the result of unending engineering research and an honest effort to supply a truck that will make your job easier and more profitable.

Keep pace with progress . . . make your next truck a Mack—Economical, Efficient; Harder-working with a Longer Life.

Mack
TRUCKS
FOR EVERY PURPOSE

Performance Counts!

Mack Trucks, Inc., Empire State Building, New York, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities including Toronto and Montreal, Canada.

Sturtevant Centrifugal Air Separator in closed circuit with Ring-Roll mill.

RECORDS PROVE

Sturtevant Air Separators

Increase production of accurately sized materials . . . reduce separating costs of sizings from 40 to 350 mesh

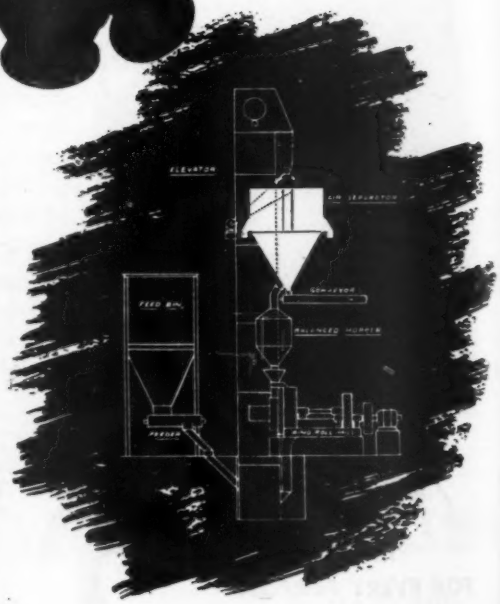
When requirements call for a continuously uniform product of any desired fineness from 40 to 350 mesh, use Sturtevant Air Separators. These highly efficient separators will increase output of accurately sized materials by as much as 300%. In addition, they reduce power costs up to 50%.

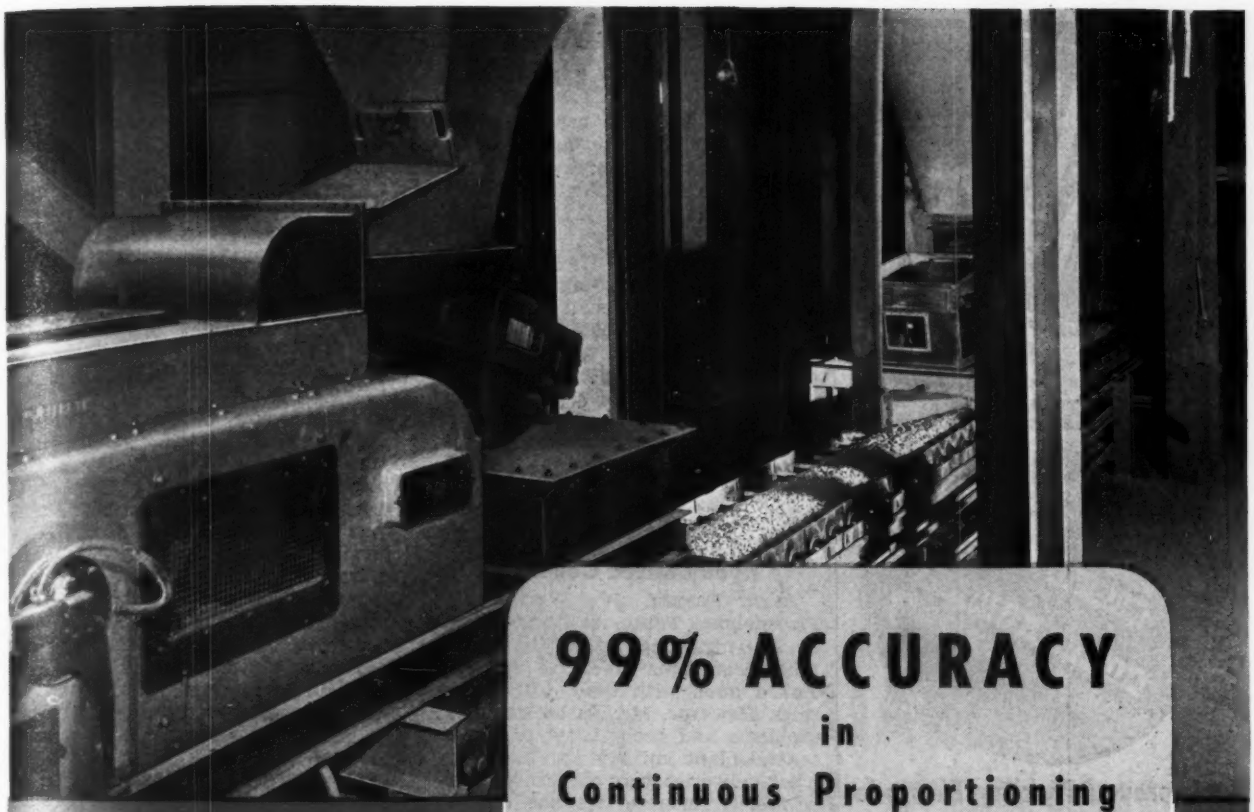
Hundreds of installations in practically every type of industry prove that Sturtevant Centrifugal Air Separators are more economical to use because their efficient operation assures finer separation of fine materials with the result that uniform quality is always obtained.

They are available in sizes from 3 to 16 feet in diameter with capacities from ¼ to 50 tons per hour. Get the entire story. Write for Bulletin 087 today.

STURTEVANT
MILL COMPANY
55 Harrison Square, Boston 22, Mass.

Designers and Builders of
CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • ELEVATORS • LABORATORY EQUIPMENT • MECHANICAL DENS AND EXCAVATORS • MIXERS





99% ACCURACY
in
Continuous Proportioning

Keep materials moving in a steady flow yet proportion them accurately with Jeffrey-Traylor Waytrols (patented). Materials heated up to 500 degrees F. are here being discharged by a group of four Waytrols to a leakproof apron conveyor, capable of handling such temperatures without difficulty.

(Left) A close-up of a Jeffrey-Traylor Type 300 Waytrol (cover removed) with scale box for maintaining accuracy of delivery.

Send for Catalog 791

THE JEFFREY MANUFACTURING COMPANY

ESTABLISHED 1877

935-99 North Fourth St., Columbus 16, Ohio

Baltimore 1 · Buffalo 2 · Cleveland 13 · Huntington · Milwaukee 11 · Pittsburgh 22
Birmingham 2 · Chicago 1 · Denver 2 · Houston 5 · New York 7 · St. Louis 3 · Salt Lake City 1
Boston 16 · Cincinnati 8 · Detroit 32 · Montgomery 11 · Philadelphia · Scranton 3

New Ways of Using Cement

(Continued from page 105)

ing. More accurate control of the grading of the fine aggregate, or changes in the proportion of fine aggregate used in the mix can be used to control the volume of air entrainment.

Experience of the U. S. Bureau of Reclamation with air-entraining concrete was given by LEWIS H. TUTHILL. His principal contribution was to the effect that more air was entrained in concrete made with crushed aggregates than with natural sand and gravel. The Bureau has also observed that air-entraining concrete made with sulphate-resisting portland cement had more resistance than concrete made with the same cement without air-entraining agents.

Ready-Mixed Concrete

ALEX. FOSTER, JR., Warner Co., Philadelphia, Penn., discussed the use of air-entraining agents in ready-mixed concrete, which at first was looked upon with some fear of results. However, Mr. Foster said, the problems had been licked so far as central-plant mixing and agitator-truck deliveries were concerned. Such premixed concrete did not contain any more entrained air than job-mixed concrete. There is some loss of entrained air in concrete in transit in agitator trucks, but this can be compensated for. Also, there is some loss in strength in concrete from air entrainment, which must be allowed for, less in lean mixtures than richer ones. There are no special difficulties in handling air-entraining concrete, the type of drum mixer has little effect and there appears to be no tendency for the concrete to cling to the blades in discharging.

The practical drawbacks encountered in the use of air-entraining cements for ready-mixed concrete, Mr. Foster said, were that there are differences in portland cements; this, and the fact that air-entraining cements are not required for all concretes, makes a serious cement storage problem; that when using air-entraining cements there is a tendency to under-sand a mixture. He had found no relation between the A.S.T.M. mortar test and the amount of air entrained in concrete.

The Warner Co. has tried dump trucks for delivery of ready-mixed concrete, but, Mr. Foster said, he had not found that air-entraining concrete prevented segregation, and he considered agitator trucks just as essential for delivery of air-entraining concrete as for ordinary mixtures.

Metering Devices

Messrs. Wuerpel and Foster both stressed the desirability of having a mechanical device for measuring the amount of admixture to be introduced at the mixer, if this method is used. So, on the program were papers discussing two such devices that are now on the market. One is made by the Dewey & Almy Chemical Co., Cambridge, Mass., and the other by the Master Builders Co., Cleveland, Ohio. Both are made to feed a prescribed amount of admixture solution to the concrete mix in either a central-plant mixer or a paving mixer. They will not be described here as the details, etc., can be obtained by any one interested from the manufacturers of the devices.

To measure the amount of air entrained in a fresh concrete mixture, STANTON WALKER, director of engineering, National Sand and Gravel Association, described a device developed by W. H. KLEIN, vice-president and general manager, Pennsylvania-Dixie Cement Corp., and himself. This device depends on the well-known law of physics, Boyles law, which is that pressure of a gas multiplied by its volume is a constant. A sample of concrete mixture is submerged in a suitable receptacle and air pressure applied to the surface of the liquid. By means of a graduated scale the volume of air entrained in the concrete can be read direct.

S. W. BENHAM'S (Indiana State Highway Commission) device for determining the amount of air entrained by use of a bucket for submerging the sample and a hook gage for measuring water levels was described by W. F. Kellerman.

C. E. WUERPEL discussed the Klein-Walker device and thought it could be perfected and be very useful. He suggested using a negative pressure rather than a positive pressure. STANTON WALKER replied that a negative pressure had been tried, but it was found impossible to prevent sucking the air out of the concrete.

More Experience

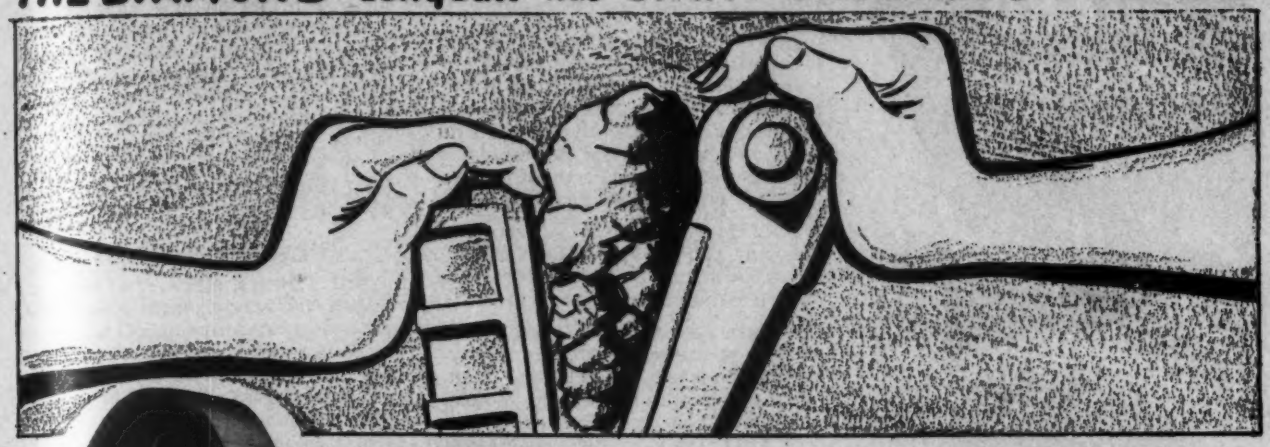
HENRY L. KENNEDY, manager, cement division, Dewey & Almy Chemical Co., described a laboratory study of the resistance of air-entraining concrete to abrasion. This is important in paving concrete where the air voids might be presumed to lessen abrasion resistance. He found, however, that if the concrete did not contain more than 6 percent entrained air there was no noticeable difference in abrasion resistance from concrete containing no entrained air.

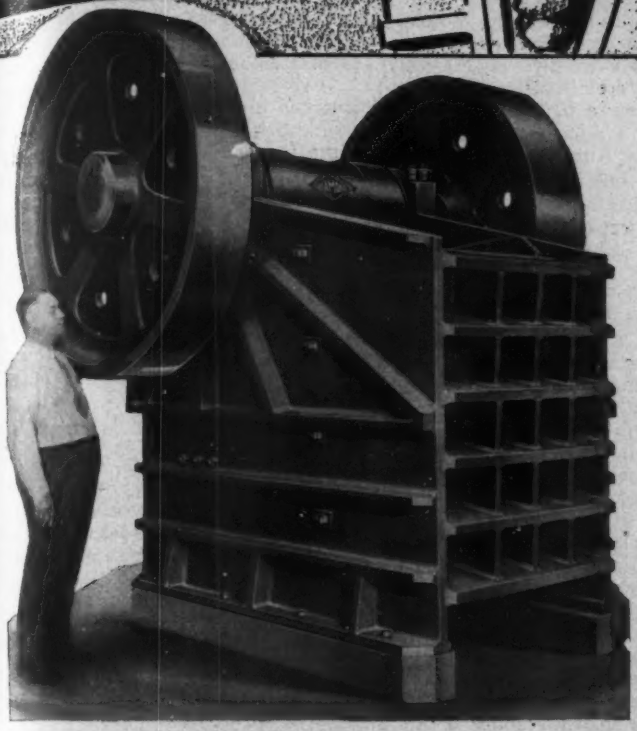
W. F. KELLERMAN, senior materials engineer, Public Roads Administration, reported on investigations of concrete made with blended portland and natural cements—that is masonry cements some of which were natural cements. He found no advantage in such blends unless air-entraining agents were also used.

MR. WAITE, representing the Century Cement Manufacturing Co.,

(Continued on page 118)

THE DIAMOND "Long Jaw" has GIANT CRUSHING POWER





Get Maximum Output

with the

DIAMOND JAW CRUSHER

The output of your primary crusher controls the output of the entire plant. A DIAMOND crusher on the job keeps screens, conveyors and elevators running at capacity, and keeps bins loaded. It will handle even the hardest rock and operates with a minimum of undersize and excellent uniformity of product.

The "Long Jaw" design of the DIAMOND means that the primary crushing effect at the top area of the jaw is a direct, smashing impact from the overthrow of the heavy eccentric shaft. The revolution continues downward and a combined crushing and grinding action throughout the entire jaw area takes place. A receding action follows and discharges the product on the underthrow of the eccentric.

MADE IN 10 SIZES

Write for Bulletin D-43-D which tells all about the ten DIAMOND sizes for every primary crushing need.

●

OTHER DIAMOND PRODUCTS

Jaw Crushers . . . Roll Crushers . . . Hammermills . . . Screens . . . Conveyors . . . Bins . . . Feeders . . . Portable and Stationary Plants.

"THERE'S NOTHING TOUGHER THAN A DIAMOND"

DIAMOND

DIAMOND IRON WORKS, INC.

AND THE MAHR MANUFACTURING CO. DIVISION

1800 SECOND STREET NORTH — MINNEAPOLIS 11, MINNESOTA

Air-Entraining Concrete

(Continued from page 116)

Rosendale, N. Y., described experiments with blends of portland and Rosendale natural cements for highway pavements in New York State. He said the good results were not attributable to air-entrainment, and that such blends were preferable to "trying to change bad cement to good with air-entraining admixtures."

E. W. SCRIPTURE, JR., director of research, The Master Builders Co., Cleveland, Ohio, said the mechanism of air entrainment is important.

DELMAR L. BLOEM, associate research engineer, National Ready-Mixed Concrete Association, summarized a report by Stanton Walker and himself on the "Results of Recent Laboratory Studies of Air-Entraining Concrete." This was chiefly interesting in its conclusion that the percentage of 30- to 50-mesh sand has an important effect on the amount of air entrainment.

Not the least interesting of the various experiences related at this meeting was that contained in a letter from W. H. HERMAN, chief research engineer, Pennsylvania Department of Highways, read by the chairman, F. H. Jackson, in which were reported some experiments with concrete pavements using so-called "old-fashioned" portland cement (about 1350 cm^2 surface area) and modern portland cement (about 1800 cm^2 surface area), both with and without air-entraining agents. The air entrainment improved the concrete made with both cements, but the more coarsely ground cement made considerably better concrete without the admixture than the finely ground cement without it—that is more durable concrete. He said his highway department was more interested in the character of air-entraining agent than in the amount of air entrained; Vinsol resin was better than tallow.

Repair of Concrete

In a half-day session on the "Maintenance and Repair of Concrete," under STANTON WALKER, vice-president, and RODERICK B. YOUNG, leader, most of the papers were of more interest to construction engineers than to producers. However, a new method of making concrete in place was described by J. W. KELLY, associate professor of civil engineering, University of California, and D. B. KEATTS, engineer, Intrusion-Prepakt Inc., Cleveland, Ohio. The process consists of packing into the form or enclosure the coarse aggregate ingredient of the concrete. Cement-fine sand grout is then introduced or intruded under pressure from below the coarse aggregate. The pipe for the grout is pulled up as the concreting proceeds. To prevent the sand and cement in the grout from separating, especially when placing under water, a finely divided siliceous material called Alfesil is used. The method is particularly adaptable to placing concrete in depths of water far deeper than it could be placed with tremies. Thus bridge piers may be placed or repaired without caissons or coffer dams. It is claimed this will so cheapen the cost of construction of bridges and marine structures that more concrete will be used.

Cement Dispersion

T. C. POWERS, manager of basic research, Portland Cement Association, gave a brief abstract of his paper published in the November, 1945, *Journal* of the Institute and made a vigorous defense of his conclusions. This last presumably was inspired by a discussion of his original paper by E. W. Scripture, Jr., which was preprinted and distributed to the membership before the meeting. To the uninitiated it appeared to be largely a controversy over terms and definitions—specifically whether one can have a dispersion in a thick cement paste or only in a dilute suspension.

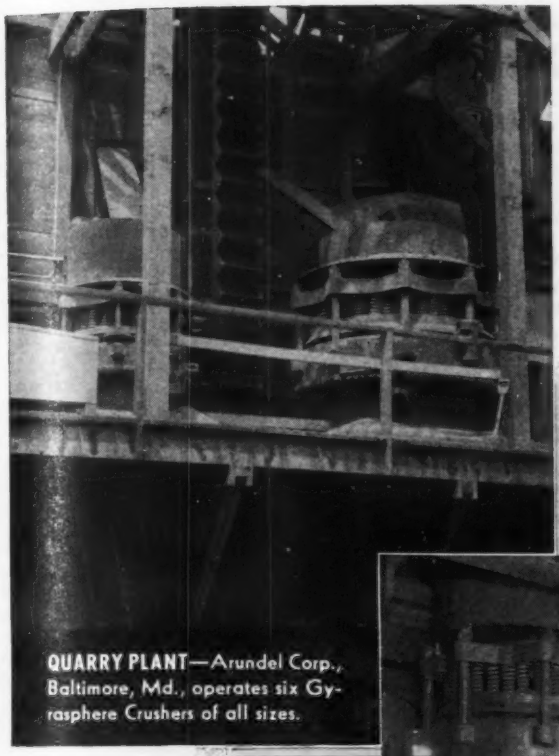
Research Session

There was a forenoon session devoted to an off-the-record discussion of active research, not yet ready to be reported upon. It is violating no confidence, however, to say that the discussion brought out that in making tests of concrete resistance to freezing and thawing, a great deal depends on how the test is conducted. For example, quick freezing and slow thawing, and slow freezing and quick thawing are the worst possible conditions and hasten disintegration of the concrete. It follows, naturally, that the resistance of structural concrete to freezing and thawing is affected by the direction of the compass to which the face is exposed. Thus, the southern face of a dam or other structure may reach fairly high temperatures and thaw and dry out every sunny day, while the reverse side facing north may be frozen all the time.

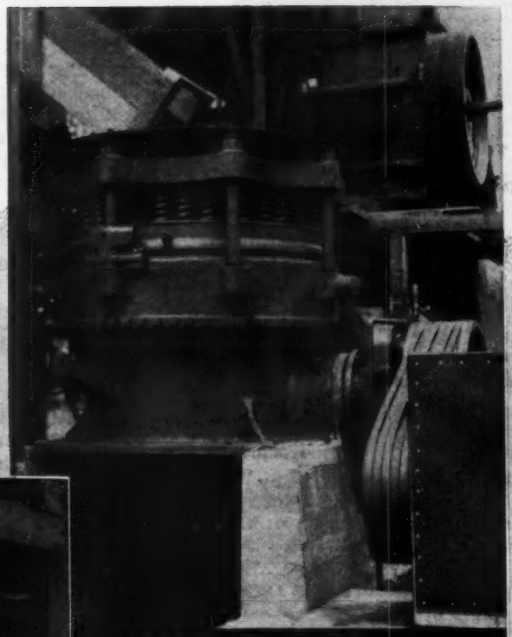
New Developments

The most interesting of the new developments in concrete construction as a result of war experience were described by A. AMIRIKIAN, principal engineer, Bureau of Yards and Docks, U. S. Navy. To build concrete barges that could compete with steel barges in weight and draft, an entirely new method of molding box-like cells of very thin (1½-in.) walls of reinforced-concrete was developed and used successfully. By extending the reinforcement and welding adjoining metal, and concreting the joints, barges and other structural units, both strength and stiffness are possible. Such structures weigh about the same as those built of steel, and this type of unit can be

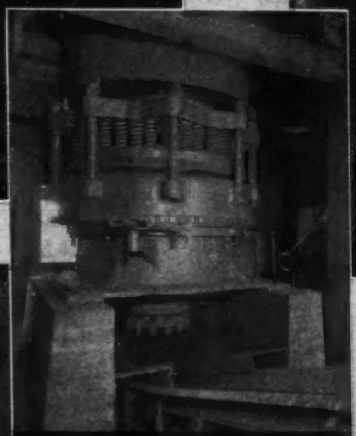
(Continued on page 120)



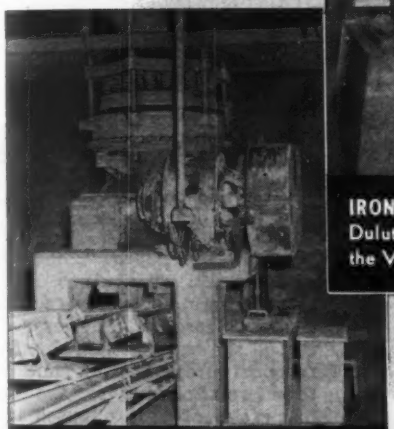
QUARRY PLANT—Arundel Corp., Baltimore, Md., operates six Gyrasphere Crushers of all sizes.



GRAVEL PLANT—Boston Sand & Gravel Co., Cambridge, Mass., operates this 48" Gyrasphere.



IRON MINE—Snyder Mining Co., Duluth, uses 48" Gyrasphere in the Virginia Mine, Eveleth, Minn.



CEMENT MILL—Diamond Portland Cement Co., Middle Branch, Ohio, uses a 24" Gyrasphere.

FINER CRUSHING

ENORMOUS TONNAGE

WIDER RANGE OF SIZES

IMPROVED PRODUCT

CONTINUOUS OPERATION

LOWER UPKEEP

TELSMITH

Gyrasphere SECONDARY CRUSHER

Send for descriptive Bulletin Y-11.

Y-7

SMITH ENGINEERING WORKS, 508 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Addresses: Sengworks, Milwaukee—Concrete, London

51 East 42nd St. New York 17, N. Y.
211 W. Wacker Drive Chicago 6, Ill.
713 Commercial Trust Bldg. Philadelphia 2, Pa.
247 Third Street Cambridge 42, Mass.
Boehck Eqpt. Co. Milwaukee 3, Wis.
Mines Eng. & Eqpt. Co. San Francisco 4—Los Angeles 14
Brandeis M & S. Co. Louisville 8, Ky.
Rish Equipment Co. Charleston 22, & Clarksburg, W. Va.
Rish Equipment Co. Roanoke 7, & Richmond 10, Va.
North Carolina Eqpt. Co. Raleigh and Charlotte 1, N.C.
Wilson-Weesner-Wilkinson Co. Knoxville 8, & Nashville 6, Tenn.

(Continued from page 118)

substituted for fabricated steel in many structures, including housing units.

V. S. MURRAY, bridge engineer, Ontario Department of Highways, described a more familiar method of making lightweight precast structural units by use of the vacuum process for removing excess water and hastening the hardening of concrete. Thin sections for housing can also be made by this process.

The last item on the long program, much of which we have not mentioned here, was an illustrated talk by MYRON A. SWAYZE, director of research, Lone Star Cement Corp., on "Observations on a Post-War European Journey." Mr. Swayze showed pictures of bomb damage to all kinds of structures, but concluded that German concrete was pretty good concrete, even though the portland cement, by American standards, would not rank very high. The Germans still store their clinker outdoors, where it gets thoroughly "seasoned" before it is ground.

Mining Engineers' Meeting

(Continued from page 106)

An entire day in the Mining Methods Division meetings was devoted to diamond drilling. "Asbestos-fiber Exploration and Production Forecasts by Core Drilling, Jeffrey Mine, Asbestos, Quebec," technical publication No. 1952, by George K. Foster and Charles D. Borror, respectively chief engineer and mine superintendent, Canadian Johns-Manville Co., Ltd., Asbestos, Quebec, Canada, described exploration and forecasting in the largest open-pit asbestos mine in the world. Diamond drilling in exploration was started at the mine in 1922, and in 1939 the first company-owned diamond drill was acquired. A second was purchased in 1940. Drill cabins, skids and tripods are of steel, particular caution being taken to minimize contamination of the asbestos fiber.

In some holes it has been necessary to drill and case up to 200 ft. of glacial overburden and quick-setting underwater cements are needed in drilling through broken and sheared ground where caving of holes is common. In some cases, the addition of calcium chloride to the cement mixture has been required for getting a set.

Much of the paper covered a system of logging whereby each cross-fiber vein 1/32-in. thick or more is measured and counted and the type of serpentine rock recorded. The ore classification is by comparison with known ore faces whose mill recoveries are on record. Empirical formulae are used in forecasting fiber recoveries from these loggings and a yearly mining schedule showing quantity and grades of fiber that may be expected from each mining area are drawn up. Foremen in the mine classify each car of rock and the crushing plant foreman also makes a classification, with remarkable accuracy, according to monthly checks. Depth of holes vary from 600 to 1300 ft.

Flotation

One entire session of Milling Methods was devoted to consideration of highly technical papers on the subject of flotation. W. A. Bates, Jr., and R. J. Miller, California Research Corp., in a paper "Technical Applications of Cresylic Acids to Flotation," technical publication No. 2015, reviewed the flotation behavior of the acids from the old and new sources, the coal-tar cresylic acids against petroleum derivatives. Variations explainable in terms of slight differences in compositions and properties between the new acids and the older coal-tar product emphasize the importance to the operator of knowledge of the agents for correct selection for his purpose, in the opinion of the authors.

A. M. GAUDIN, professor of Mineral Dressing, Massachusetts Institute of Technology, in a paper "Surface Areas of Flotation Concentrates and the Thickness of Collector Coatings," technical publication No. 2002, presented initial results on the relationship of mineral surface area and collecting agent requirements.

In another paper, "The Properties of Pine Oil Related to Flotation," technical publication No. 2011, W. T. Bishop, Hercules Powder Co., discussed the composition, chemical and physical properties of pine oil and their relationship to the frothing properties of pine oil used in flotation processes.

Other papers on flotation were "Correlation between Mineral Behavior in Cataphoresis and in Flotation," technical publication No. 2005, by Prof. A. M. Gaudin; "Principles of Flotation—Paraffin Chain Salts as Flotation Reagents," by J. Rogers, K. L. Sutherland, E. E. Wark and I. W. Wark, Council for Scientific and Industrial Research, Australia; "Limiting Solubility Products of Collector Coatings," by A. F. Taggart, Professor, and M. D. Hassialis, Instructor, Mineral Dressing, Columbia University; and "The Submergence Factor in the Impeller-type Flotation Machine," by A. W. Fahrenwald, Dean, School of Mines, University of Idaho.

Heavy Media Separation

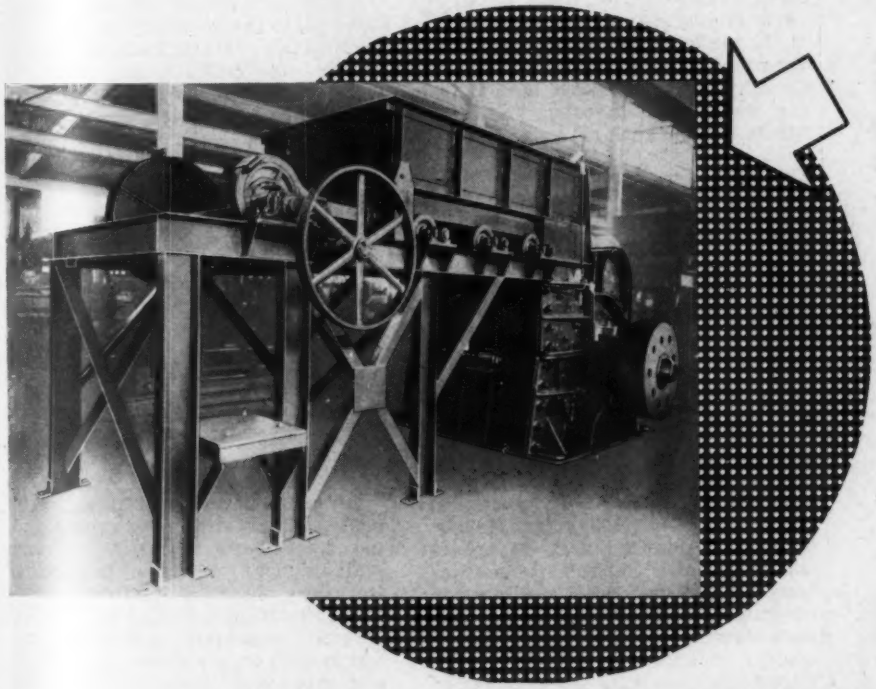
A joint session of the Industrial Minerals Division and Milling Meth-

(Continued on page 122)

Over

6,000,000 Tons of Agricultural Limestone processed annually with

GRUENDLER CRUSHER & PULVERIZER COMPANY



Roller bearing equipped to reduce power consumption. Heavy duty to give extra long life.

The nation needs more agstone. Let Gruendler help you increase your production . . . and your profits.

Over 60 years of performance under all sorts of conditions have proven the swing hammer principle . . . pioneered and developed by Gruendler. Today, more than one-fourth of the nation's agstone tonnage is produced with Gruendler equipment incorporating the swing hammer principle. Install all-Gruendler equipment for rock and gravel processing including:

JAW CRUSHERS • FEEDERS • ELEVATOR CONVEYORS • ROLLS • SCREENS

Write for information to Dept. AG.

GRUENDLER PULVERIZERS

2917 N. Market Street — St. Louis 6, Mo.

Heavy Media Separation

(Continued from page 120)

ods considered heavy media separation and the use of continuous centrifuges. Heavy media separation is gaining in use in the mining industry and offers possibilities in the mineral aggregates industries in the separation of unsound from sound aggregate. S. J. Swainson, director, Ore Dressing, American Cyanamid Co., reviewed progress in heavy media separation in 1945. He told of new plants to be installed and said that 40 million tons of various materials had been processed thus far. It affords possibilities in coal cleaning, he said, based on pilot plant results. Standard flowsheets were shown.

C. Y. GARBER, mill superintendent, Bunker Hill and Sullivan Mining and Concentrating Co., Kellogg, Idaho, in a paper "Preparation and Reconditioning of Sink-Float Media," technical publication No. 1985, discussed experiences with a galena medium. H. L. McNeill, mining engineer, The Stearns Roger Manufacturing Co., Denver, Colo., discussed a new tool for the mining industry, "Selective Media Concentration."

Centrifuges

A. L. JOHNSON, Iowa State University, discussed the fundamentals of classification by batch-type, automatic batch-type and continuous centrifuges with particular emphasis on the latter and its various applications by industry.

Settling Rates—Vibration

This session concluded with a paper, "The Effect of Sonic Vibrations on the Settling Rates of Ground Rock Particles in Water," technical publication No. 1999, by Helmut Thielsch, Allis-Chalmers Manufacturing Co. Mr. Thielsch's paper was largely concerned with a discussion of tests and equipment used in experiments in the Allis-Chalmers laboratory to study the effect of sonic vibrations on settling of particles of different sizes and concentrations. Sonic vibrations are already used in the emulsification and degasification of liquids and may have application in accelerating thickening processes in the rock products industries.

Pumping Sands

Two papers on the subject of pumping sands and one on the subject of mill design presented before a Mill Design session were of interest. The two papers on sand pumping, "Practical Aspects of Pumping Sands, Slurries and Slimes," technical publication No. 2013, by W. B. Stephenson, The Allen-Sherman-Hoff Co., and "Installation and Performance of Sand Pumps," technical publication No. 1978, by C. G. Southmayd, Canadian Allis-Chalmers, Ltd., covered the theory and practice of pumping thoroughly in all its factors. There were numerous practical suggestions for operating men worthy of study.

The paper, "Mill Design for Labor Economy," technical publication No. 1997, by N. L. Weiss, Compañia Minera Asarco, S. A., while written for mining operations, would be of interest to any rock products operator since the factors discussed apply as well to non-metallics processing as to mining. Mr. Weiss covered economical considerations in the location of a mill and plant design for coordinated arrangement of process equipment. He discussed the factors involved in correct feed chutes and materials-handling systems, etc. He emphasized that the keynote in crushing plant design is liberality, with crushers capable of doing the day's crushing in 12 to 14 hr. and accessory equipment of comparable over-capacity. He stressed the need for correct regulation of feed to a crusher or screen by mechanical feeders, to insure steady flow and the elimination of overloads. A no-load device, to indicate an empty or arched bin is an indispensable aid, in his opinion, also overload signals on screens and electrically interlocking switches on all series conveyors.

Liberal headroom, for good vertical drops, and few clogged chutes are essential to good crushing plant design, he said, and, in discussing grinding mills he recommended automatic controls by ammeter or other means which indicate loading. Access to all machinery for repair is to be provided in correct plant design, and economical disposal systems for tailings and waste, he said.

Milling

An entire session of Milling Methods was concerned with grinding. A paper, "Crushing Tests by Pressure and Impact," technical publication No. 1895, by Fred C. Bond, Allis-Chalmers Manufacturing Co., mainly covered laboratory procedure and test results on a number of minerals and ores, with complete description of testing apparatus.

"Ball Wear and Functioning of the Ball Load in a Fine-Grinding Ball Mill," technical publication No. 1984, by W. I. Garms and J. L. Stevens, Kennecott Copper Corp., was a report covering recent tests on cylindrical drum mills to determine the relative economic value of standard cast balls vs. forged steel balls and other factors. The paper drew some interesting conclusions on shapes of grinding media after wear and classification within the mill.

South American Minerals

Pan-American Institute of Mining Engineering and Geology held a joint session with the Industrial Minerals Division, Mining Geology Committee and Society of Economic Geologists, with papers on the more critical min-

(Continued on page 124)

(Continued from page 122)

erals including mica and quartz crystals.

Mica

DONALD D. SMYTHE, formerly Chief of Geological Service, Foreign Economic Administration, Brazil, in his paper, "Muscovite Mica in Brazil," technical publication No. 1972, described the topography of the mica region and discussed prospecting, quality of the mica, its preparation and evaluation of the deposits. Most of the production comes from the State of Minas Gerais in eastern Brazil.

Glass Sand

A paper, "Glass Sand and a Glass Industry in Puerto Rico," technical publication No. 1939, by H. A. Meyerhoff and J. Earl Frazier, Professor of Geology, Smith College, and president, Frazier-Simplex, Inc., discussed silica of extraordinary purity that has been exploited in Puerto Rico to make glass.

Fifty separate deposits have been mapped in Lago Tortuguero alone, and deposits range between 3- and 5-ft. thickness on the average. After study of the sands, efforts were made to put the silica to commercial use, even to considering shipping it to the mainland, but competition of U. S. sands prevented that. After the war, a glass plant was built by Puerto Rico Glass Corp. for the manufacture of glass, to utilize 90 tons of silica in 24 hr. The only serious production problem is the removal of a high vegetal content, there being very little mineral impurities. The sand is screened, washed, dried, and that used for flint glass is magnetically cleaned. The glass plant manufactures principally green-glass and flint-glass bottles.

Quartz Crystals

There were two papers on quartz crystals. "Quartz Crystal as a Mineral Resource," technical publication No. 1916, by R. B. McCormick, Chief, Quartz Crystal Section, War Production Board, discussed utilization of quartz crystal radio oscillator plates to control frequency in radio broadcasting, police, commercial and other communications equipment—civilian markets.

Demands of the armed services for crystals led to an unprecedented expansion of the manufacturing industry, from $1,500,000 in 1940 to $150,000,000 during the war. Brazil is virtually the only source of supply. Quartz crystals, according to the author, have become a major nonmetallic mineral resource.

The other paper, "Deposits of Quartz Crystals in Espirato Santo and Eastern Minas Gerais, Brazil," technical publication No. 1962, by F. L. Knouse, formerly with the Foreign Economic Administration, discussed the deposits, early operations and production methods.

Titania In Cement

(Continued from page 184)

curacy of the proposed method, National Bureau of Standards Standard Samples Nos. 102, Silica Brick, and 1A, Argillaceous Limestone, were analyzed for titania. Suitable solutions of the titania were obtained by fusion of the sample with Na_2CO_3, solution in HCl, one dehydration and filtration of the silica, precipitation of the R_2O_3 and fusion of the R_2O_3 and HP residue from the silica with $K_2S_2O_7$. Thereafter the recommended procedure was used.

Titania percentages of 0.158 and 0.158 were obtained in duplicate analyses of the silica brick, which is certified to contain 0.16 percent. Titania percentages of 0.167 and 0.170 were obtained in duplicate analyses of the argillaceous limestone, which is certified to contain 0.16 percent. It should be noted that the results by different analysts averaged to obtain the latter value were 0.11, 0.16, 0.16, 0.17, 0.18 and 0.20 percent.

Typical Analyses—Analysis of about 25 typical portland cements of domestic manufacture, including the standard, low and moderate heat-of-hardening, and high-early-strength types showed titania contents ranging from 0.17 percent to 0.33 percent. A natural cement and an aluminous cement were found to contain 0.24 percent and 1.31 percent, respectively. Of interest for purposes of comparison are the three Brazilian portland cements reported by Maffei to contain from 0.15 percent to 0.26 percent and the eight Russian white portland cements reported by Nagerova and Lebedeva to contain from 0.38 to 1.13 percent.

References

[1] A.S.T.M. Standard Methods of Chemical Analysis of Portland Cement, A.S.T.M. Designation C114-44.

[2] Ibid., section 30.

[3] Ayres, G. H., and Vienneau, E. M., Ind. Eng. Chem., Anal. Ed. 12, 96 (1940).

[4] Federal Specification SS-C-158a dated April 17, 1941, for Cements, Hydraulic; General Specifications (Methods for Sampling, Inspection, and Testing).

[5] Hillebrand, W. F., and Lundell, G. E. F., "Applied Inorganic Analysis," p. 456. John Wiley and Sons, Inc., New York, N. Y. (1929).

[6] Kenigstul, M. D., Zavodskaya Lab. 9, 1203-5 (1940).

[7] Lange, B., "Kolorimetrische Analyse," p. 213-7. Verlag Chemie, GMBH, Berlin (1944).

[8] Lundell, G. E. F., and Hoffman, J. I., "Outlines of Methods of Chemical Analysis," p. 171. John Wiley and Sons, Inc., New York, N. Y. (1938).

[9] Maffei, F. J., Anais assoc. quim. Brasil 2, 195-201 (1943).

[10] Milner, O., Proctor, K. L., and Weinberg, S., Ind. Eng. Chem., Anal. Ed. 17, 142 (1945).

[11] Nagerova, E. I., and Lebedeva, A. D., Zavodskaya Lab. 8, 1069-73 (1939).

[12] Snell, F. D., and Snell, C. T., "Colorimetric Methods of Analysis," 2nd Ed., Vol. 1, p. 355. D. Van Nostrand Co., Inc., New York (1936).

[13] Weller, A., Ber., 15, 2592 (1882).

How Difficult Machining of Manganese Steel Cutter Heads Is Accomplished.....

"The toughest steel known" is by the same token far from easy to machine. Frequently manganese steel is a "must" for some part where machining of the most difficult nature is also a requisite. In many such cases, ingenuity has proved equal to the problem.

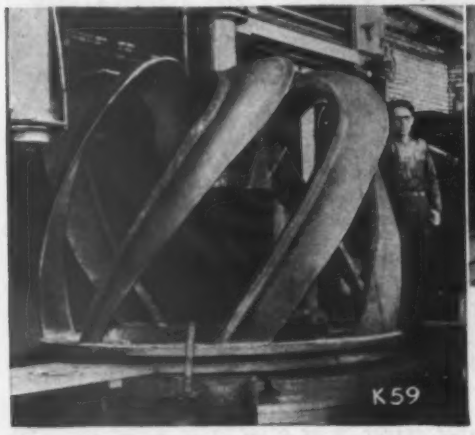
Austenitic manganese steel, because of its incomparable resistance to impact and abrasive wear, has long been the accepted material for dredge cutter heads. Picture K-59 shows an Amsco cutter head which was made for a tidewater pipeline dredge employed in harbor improvements and land reclamation.

This 8,062 lb. manganese steel, seven-blade, plain basket type, rotary cutter head for clockwise rotation was made with the back ring, blades and hub cast integrally. It was photographed during the finish grinding of the hub bore.

The completed cutter head includes a threaded bore for attachment to its shaft. As manganese steel is difficult to cut or thread, a pre-machined carbon steel piece was employed for the threaded portion and securely locked in place. In the manganese steel portion of the hub, the circular bore details include a shoulder collar at the rear face end for definitely fitting the hub center, which is set into its position with a shrink fit. The hub center is additionally secured in place with a heavily welded seam at the circular edge of the front end face.

The outside diameter of the threaded portion of the shaft is $13\frac{31}{32}$". Overall length of the completed cutter head is 5'11¼", the inside diameter of the back ring is 6'4", and the outside diameter of the heavy angle section 7'3".

A number of designs of Amsco cutter heads are available. Ask for Bulletin 844-D, "Manganese Steel for All Dredging Purposes."



R-819. Another Amsco cutter head, photographed during the bore-planing operation. Designed by customer for digging gravel, hard-pan mixtures and the cutting of stumps and roots in cypress swamps. Weight 4464 lbs.; overall diameter 6'1¾".

California Producers Hear Secretary Ahearn

V. P. AHEARN, executive secretary of the National Sand and Gravel Association, was the guest of honor at a recent luncheon meeting sponsored by the Southern California Rock Products Association and the Southern California Ready Mixed Concrete Association. The luncheon was attended by 80 members of the industries from the Southern California area as well as by guest producers from other parts of the country.

From the Los Angeles area representatives were present from the Arrow Rock Co.; Azusa Rock & Sand Co.; Blue Diamond Corporation; Chandler's Palos Verdes Sand Co.; Consolidated Rock Products Co., Graham Bros., Inc.; John D. Gregg; Richard R. Ball; Manning Bros. Rock & Sand Co.; Owl Rock Products Co.; Edward Sidebotham & Son, Inc.; E. Lockett & Son; S. H. Bacon Materials Co.; and the Security Materials Co. From San Diego the officers of the San Diego Transit-Mixed Concrete Co., and the H. G. Fenton Material Co. were present; from Riverside and San Bernadino came the men from Service Materials Co., and the Triangle Rock & Sand Co., and from Bakersfield, the representatives of the Kern Rock Co.; the Ventura County producers were well represented by the officials of the Saticoy Rock Co., Montalvo Rock Co., and El Rio Rock Co. Guests from out of the state were John Prince of the Stewart Sand and Material Co., Kansas City, Mo., and F. P. Spratlen, Jr., of the Ready Mixed Concrete Co. of Denver.

Paul C. Graham, president of Graham Bros., Inc., who is the present director on the board of the National Sand and Gravel Association from Southern California, acted as Chairman of the luncheon meeting and introduced Robert Mitchell, president of the Southern California Rock Products Association and past president of the National Sand and Gravel Association, who in turn introduced Mr. Ahearn.

The address which was delivered by Mr. Ahearn was most informative and interesting. He spoke of the events which occurred in the closing days of the National War Labor Board, of which he was the Chairman of the Industry Members, and their effect on the actions which followed; he told of his experience as a member of the President's Management-Labor Committee and stated that while little seemed to have been accomplished by the Committee, actually several very important matters such as grievance procedure were settled. Then followed a most interesting account of the results of the Government's Wage-Price policy, and its far reaching affect into every industry. The producers were told of the procedure they must follow in the matter of wage increases as related to price relief and warned against the pit-falls

in not following the pattern as set up by the administration. They were told of the recent ruling of the Federal Appellate Court in the Schroeder case where the ruling of the Administrator of the Wage and Hour Division was held illegal.

Mr. Ahearn also stated that one of the objects of his visit to Los Angeles was to make the preliminary arrangements for the 1947 Annual Meetings of the National Sand and Gravel Association and the National Ready Mixed Concrete Association which will be held in Los Angeles during the week of March 3, 1947.

Serpentine Fertilizer

A RECENT ISSUE of the "California Mining Journal" tells of a discovery by a New Zealand chemist that addition of the magnesium silicate known as Serpentine improved the fertilization properties of superphosphate at a lower cost to the farm. Part of a letter on the subject from the New Zealand Mines Department is as follows:

"Finely ground serpentine is used in the preparation of Serpentine-Super-Phosphate, which is prepared in mixing 1 part of ground serpentine with 3 parts of superphosphate. The resulting mixture has many advantages over the straight superphosphate, in particular the drying of the Serpentine and Superphosphate Mixture due to the binding of hygroscopic water into water of crystallization of the new phosphate compounds formed during the reaction between the component parts of the mixture. It also facilitates the application of the fertilizer to the ground by the drilling machine, preserves the containing bags, and generally makes for easier handling.

"Its use has now become obligatory in New Zealand, as owing to the occupation of Nauru Island by the Japanese, New Zealand is cut off from the main source of rock phosphate. While there are enormous deposits of serpentine available in New Zealand, the use of serpentine helps to eke out our limited supplies of rock phosphate.

"In 1943 some 62,000 tons of serpentine were used by the fertilizer industry in New Zealand as against 31,000 tons in 1942. Present indications are that the use of serpentine will be maintained even after the war years when phosphate supplies are again available."

Oregon State Department of Geology Mineral Industries has been looking into the possible advantages of this mixture because of the vast surface deposits of serpentine available.

The original idea came from Russia where the addition of Dunite provided magnesia and colloidal silicon dioxide for commercial triple phosphates, and reduced the acidic moisture that attacks containing bags and tends to make lumps which cause difficulty when distributed into the soil by means of a drill.

Cement and Concrete Aggregates Discussed at A. S. T. M. Meetings

AT A WELL-ATTENDED meeting in Pittsburgh, Penn., on February 26, American Society for Testing Materials Committee C-1 on Cement approved the following three recommendations affecting standards:

(1) To revise the Standard Specifications for Portland Cement, C 150-44 by adding to Table I on Chemical Requirements a footnote providing that the maximum limit for sulfur trioxide content for Types I and III cements be 2.5 and 3.0 percent, respectively, when the tricalcium aluminate content is greater than 8 percent.

(2) To revise the Tentative Specifications for Air-Entraining Cement, C 175-44 T, by adding to Table I a footnote providing that the maximum limit for sulfur trioxide content for Type IA cement be 2.5 percent when the tricalcium aluminate content is greater than 8 percent.

(Recommendations 1 and 2 represent an increase of 0.5 percent in the allowable maximum limit for sulfur trioxide content when the tricalcium aluminate content exceeds 8 percent.)

(3) To adopt as standard Sections 2 to 10 inclusive of the Tentative Methods of Chemical Analysis of Portland Cement, C 114-44 T. These sections include a rapid alternate method for sodium oxide and potassium oxide, a method for sulfide sulfur, and the alternate method of rapid determination by turbidimeter for sulfur trioxide.

Numerous progress reports were presented by the various subcommittees. A very interesting report covered many details of the study which is now being made of the extensive data secured by a group of laboratories in an investigation of important factors relating to the compressive strength test of mortars. Two of the subcommittees reported on current studies of flow table questions. There were also extensive summaries of work on the use of the lean mortar bar test for sulfate resistance, and on the effects of alkalies in portland cement on the durability of concrete. William Lerch, Portland Cement Association, presented a well-illustrated talk on the Effect of SO_3 Content of Cement on the Durability of Concrete.

Concrete and Concrete Aggregates

While the meetings of the several subcommittees and the main group comprising A.S.T.M. Committee C-9 on Concrete and Concrete Aggregates were essentially of a reorganization nature nevertheless a number of interesting actions were taken. There was heavy attendance of those concerned with the production and use of aggregates and concrete. The committee announced satisfactory progress in its plans for a Symposium on Durability of Concrete to be held during the A.S.T.M. Annual Meeting in Buffalo the week of June 24. W. P. Kellerman, of the Federal Public Roads Administration, is Chairman of the Symposium Group, and serving with him are: R. E. Davis, University of California; Floyd B. Hornibrook, Master Builders Research Laboratories; and K. B. Woods, Purdue University.

Two new subcommittees are being reorganized to investigate methods of test and perhaps eventually to develop specifications—the first on admixtures in concrete; and another on the reactivity of aggregates with alkalies.

Revisions will eventually be recommended in the Standard Test for Structural Strength of Fine Aggregate (C 87) with attendant changes in the Specifications for Concrete Aggregates (C 33) which will, in effect, limit the scope of the tests with respect to determining harmful impurities, and consequently will no longer be an acceptance test for sands that are suspected.

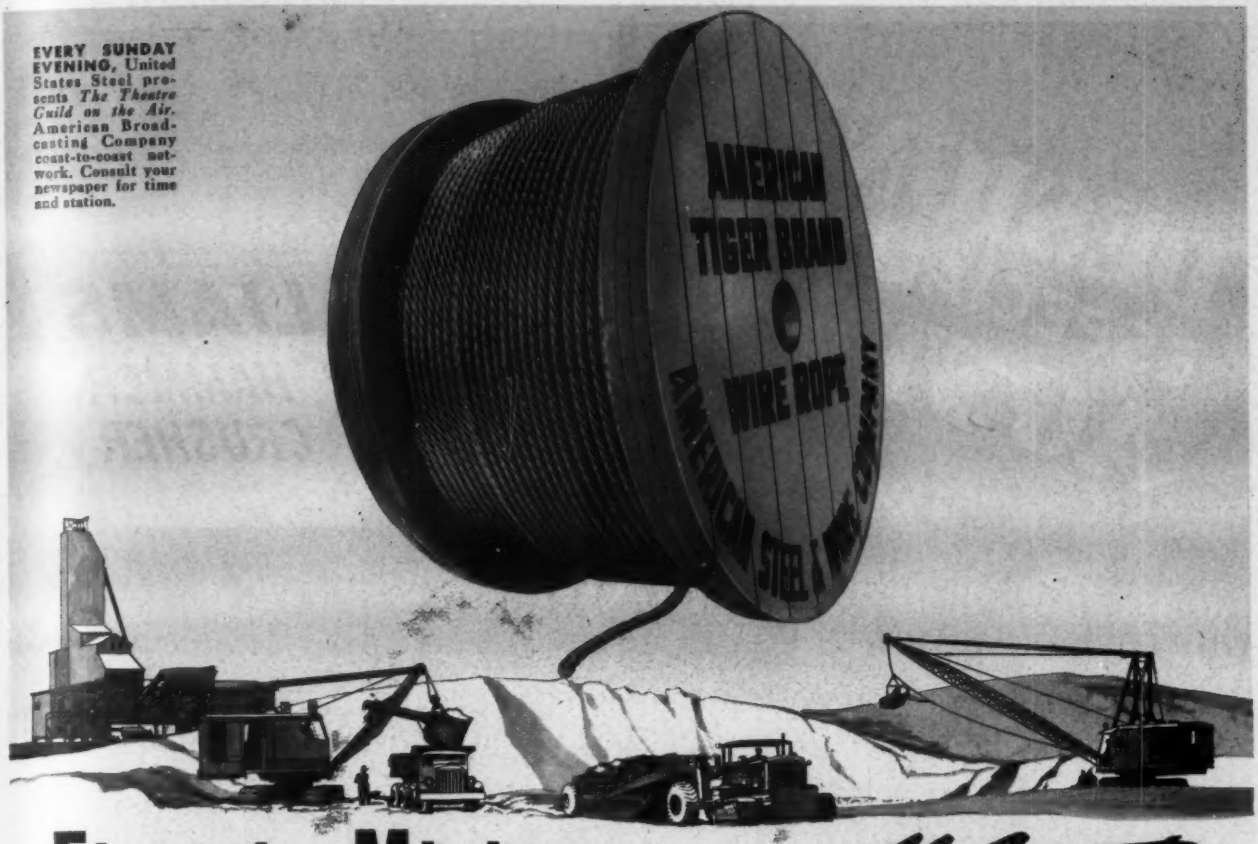
The committee will develop jointly with A.S.T.M. Committee C-1 on Cement a definition for admixtures. It is studying revisions in the definitions for sand, with the following proposal considered:

Sand.—The fine granular material usually smaller than ¼ in. resulting from the erosion of rock by natural agencies or from the mechanical reduction of weakly cemented sandstone. The term is often used with a qualifying adjective to denote the product of mechanical crushing, as for example, "stone sand" or slag sand."

Several new studies are to be inaugurated in the general field of methods and apparatus for testing concrete, one of which will involve thermal coefficient of aggregates, which property bears a very tangible relation to the durability of concrete, and in general affects the quality and use of the product. Editorial changes are being incorporated in the slump and the flow tests, C 143 and C 124.

In work on aggregates, major revisions will probably be developed in the soundness test. Another new project will involve the identification of aggregate types. A broad term descriptive of this might be "lithological characteristics."

Among the most important specifications developed by Committee C-9 are those covering ready-mixed concrete (C 94). They have been the subject of much study and discussion and have been widely used as such or as the basis for clauses used in general specifications.



EVERY SUNDAY EVENING, United States Steel presents *The Theatre Guild on the Air.* American Broadcasting Company coast-to-coast network. Consult your newspaper for time and station.

First in Mining— *on all Counts*

MADE by the world's largest manufacturer of wire rope, U·S·S American TIGER BRAND has the stamina to handle the toughest mining job.

This superior wire rope is made of high tensile wire from select U·S·S Steel. It is extra strong, extra tough, extra flexible.

In the Excellay Preformed construction, TIGER BRAND is easy to handle . . . can be installed quickly . . . has less tendency to loop or kink . . . requires shorter breaking-in time. It hugs sheave grooves and drums at all speeds . . . has highest resistance to bending fatigue. It is safer to use because crown wires lie flat and in place when broken . . . jagged wires do not stick out to injure handlers. TIGER BRAND Excellay Preformed construction means each wire and strand carries its full share of the load to stand up under long, hard service.

You can depend on TIGER BRAND to help reduce maintenance and replacement costs . . . to help you do a more efficient job in every operation requiring wire rope . . . for back of every reel of TIGER BRAND are the vast research, engineering and production resources of the United States Steel Corporation. You can't buy finer wire rope at any price. So, get in touch with your nearest TIGER BRAND Wire Rope supplier now.

Excellay Preformed

AMERICAN STEEL & WIRE COMPANY
Cleveland · Chicago · New York

COLUMBIA STEEL COMPANY
San Francisco

Tennessee Coal, Iron & Railroad Company, Birmingham, *Southern Distributors*
United States Steel Export Company, New York

UNITED STATES STEEL

USS AMERICAN TIGER BRAND WIRE ROPE UNITED STATES STEEL

U·S·S AMERICAN

TIGER BRAND *Wire Rope*

DESIGNED ESPECIALLY FOR AGSTONE

WILLIAMS "NF" HAMMER CRUSHER

Open view of the Williams "NF" Mill showing heavy duty hammers, grinding plates, side liners and cover liners. Also shows easy accessibility to mill for repairs, etc.

FEATURES OF THE "N F"

- Adjustable grinding plate.
- Hammers adjustable to overcome wear.
- Larger capacities.
- Lifetime construction.
- 2" top liners, 1" side liners.
- Easy to work on—hinged cover.

The Williams "NF" Hammer Crusher was designed especially for reducing 4" or smaller stone to ¾", ½" or agricultural limestone. Embodies all the outstanding features Williams has developed in hammer mill design and construction and has proved itself an outstanding performer in the field.

The "NF" is built in a large range of sizes with capacities from 9 to 35 tons per hour when making agricultural limestone, affording a size mill for any job. Its principles of operation—a combination crushing and grinding—enables it to make agstone that meets rigid size specifications at a good margin of profit to producers.

"We appreciate your inquiries—write today for additional information—no obligation on your part."

WILLIAMS PATENT CRUSHER & PULVERIZER COMPANY
800 ST. LOUIS AVENUE
ST. LOUIS, MO.

OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD

Williams

PATENT CRUSHERS GRINDERS SHREDDERS

INFORMATION

You can obtain catalogs listed on these pages by merely checking and mailing the coupon below.

TO HELP YOU MEET TODAY'S PROBLEMS AND TO MAKE PLANS FOR TOMORROW

1 AI…LTERS — American Air Filter Co.… has published an interesting bookl… form 255, entitled "The Magic of El… ics in Air Filtration," describing … illustrating the electro-matic, electr… electro-airmat and electro-mist… of electronic air filters. The theor… practice, research and development advantages of electronic air fil… are also discussed.

2 BE…GS—Keystone Electric Co. has issued… bulletin describing and illustr… all bearing endbells for conversio… sleeve bearing electric motors and p… to ball or roller bearing operatio… cement mills, chemical plants, steel … coal mines and other industries … dust and dirt produce rapid wear o… ve bearings.

3 BE…GS—SKF Industries, Inc., has publis… a 270-page technical book entitle… ll and Roller Bearing Engineering… taining fundamental information… ll phases of bearing applications … ustry. Included are some 900 drawin… d tables, technical description of con… bearing types, and fundamental … neering studies. Data on dimensio… proportions, theory and calculatio… rolling resistance, friction torque… ion coefficients, stresses and deforma… load distribution, motion and in… etc., are also given.

4 BEL… Chain Belt Co. has issued an 8-page… letin No. 45-1, describing and illustrat… the Baldwin-Rex roller chain belts. … fications and list prices are also gi…

5 CEMENT — Universal Atlas Cement Co. has… ublished a booklet outlining the dev… pment of Duraplastic cement, an air-… aining cement which makes concrete … re durable and more plastic. The bo… defines Duraplastic as a true portlan… ment in which there has been intergr… during manufacture a small but ve… recise amount of air-entraining m… al needed for satisfactory field perfor… e. It complies with Federal and A… M. specifications and sells at the sa… rice as normal cement.

6 CO…TERS — Allis-Chalmers Mfg. Co. h… ublished Bulletin B-6373 describi… nd illustrating mercury arc conve… designed for induction heating o… ns in the 500-2000 cycle frequen… e. Drawing and wiring diagrams … pical installations, graphs and "explo… views of the Excitron converter … lso shown.

7 CO…VORS—Link-Belt Co. has published… er No. 2068, describing and illustr… the Sidekar-Karrier conveyor for b… aterials. Elevation and plan views … ng details of Type I and Type II de… conveyors are also shown. A diagra… ic view of the conveyor is includ…

8 CR…ERS—American Pulverizer Co. has i… a new bulletin describing and illust… crushers for metal turnings, coal, … and a wide variety of friable, semi-… e and fibrous materials. Size, horsep… , speed, weight and floor space requi… lso cross-section views are also given.

9 CR…ERS — Traylor Engineering & Mfg. C… has released new editions of Bulleti… No. 4112, covering Type TY reducti… crushers; No. 4637, covering crushi… rolls; and No. 2105, with addendum… covering the new Type H Blake crushers. General specifications, diagrammatic drawings, sizes and capacities, and tips on care of these crushers are also included.

10 DIESELS — Diesel Engine Manufacturers Association has published a 32-page booklet entitled "The Story of the Diesel" which discusses the Diesel's post-war future, its present fields of application, and advantages over other types of power. The beginning and development of the Diesel industry are also covered. A section describing opportunities for young men in the Diesel engine industry will be of special interest to returning war veterans, many of whom have had first-hand experience with Diesels in the armed forces.

11 DIESELS—Joshua Hendy Iron Works has published a booklet describing and illustrating the Series "20" Marine Diesel engines of 190- to 250-hp., also the Series "50"-"60" Diesels of 350- to 712-hp. Diagrams and specifications of the "20" series are also shown.

12 DIESELS—Nordberg Mfg. Co. has released Bulletin No. 122, describing and illustrating stationary two-cycle Diesel engines, ranging in size from 750 to 8500 b.h.p. Cross-section views, schematic arrangement of gas details and piping, and typical installations are also shown.

13 DREDGES—American Manganese Steel Division of American Brake Shoe Co. has issued a 56-page catalog bulletin for dredgers, No. 844-D, describing and illustrating placer, ladder, dipper and suction dredges. Various types of dippers, buckets, bails, stick racks, pinions, etc., are also illustrated and described. Information on pumps for suction dredges, pipeline fittings, Eagle "Swintek" screening cutterhead, sheaves, gears, rollers, etc., is included.

14 DUST COLLECTORS — Claude B. Schneible Co. new Bulletin No. 310 describes and illustrates multi-wash dust collectors, settling and dewatering tanks and pumps. Many installations are shown in the bulletin, also complete information on the construction, operation and application of the various units.

15 ELECTRONICS—General Electric Co. bulletin GES-3303 describes and illustrates training course which offers a practical and easily understood presentation of industrial electronics. The course is devoted to the description and characteristics of various types of tubes used in industry; specific industrial applications; and includes sound slidefilms and records, completely illustrated review booklets with each subject, and Instructor's Guide. This course will be of interest to plant management, production men, and electrical and maintenance staffs. It is useful as a refresher course for engineering staffs and electrical engineers.

16 FEEDERS — Denver Equipment Co. Bulletin F6-B6 describes and illustrates wet and dry reagent feeders for accurate control in feeding and proportioning liquid and solid chemicals and flotation reagents. The bulletin also includes data for distribution and emulsification of flotation reagents and methods of feeding special corrosive liquids.

17 FORGINGS — Kropp Forge Co. has compiled and published a 32-page booklet entitled "Glossary of Machine Shop Terms," defining machine shop terminology as it applies to the machining of forgings. This booklet will be a great help to buyers and users of machined forgings.

18 GEARS—The Falk Corp. has released an interesting brochure depicting the history of the corporation from the founding in 1892 by Herman W. Falk, present chairman of the board, to the present day. The booklet is entitled "The Story of 'A Good Name in Industry'" and is well illustrated. Names of home office and plant employes are given in a separate folder.

Fill Out Reverse Side—MAIL TODAY

FIRST CLASS
PERMIT NO. 1417
(Sec. 510, P.L. & R.)
CHICAGO, ILL.

BUSINESS REPLY CARD

No Postage Stamp Necessary if Mailed in the United States

—POSTAGE WILL BE PAID BY—

ROCK PRODUCTS

309 WEST JACKSON BOULEVARD

CHICAGO 6, ILL.

FREE! *Information on* NEW LITERATURE about your business

USE COUPON BELOW

19 GENERATORS — Electric Machinery Mfg. Co. has released two new 4-page folders on generators. Publication No. 177 describes and illustrates the bracket type, Forms R, S, and T, with speeds ranging from 500 to 1800 r.p.m. and kva ratings from 3.75 to 4.38. Publication No. 179 describes and illustrates the pedestal-type, Form B and C, with speeds ranging from 500 to 1800 r.p.m. and kva ratings from 250 to 5000.

20 HOOKS—The Thomas Laughlin Co. new Catalog No. 135 describes and illustrates industrial and marine hardware such as links, shackles, swivels, hooks, wire rope sockets, clips, turnbuckles, bolts, etc. Charts, list prices on all available items, engineering data, and comparative rope strength are also included.

21 INSULATORS—B. F. Goodrich Co. has issued a general booklet on industrial rubber products such as Vibro-insulators, molded rubber goods, extrusions, rubber lined tanks, valves, Koroseal products, sponge, anode covered products, lathe cut products, V-belts and cements.

22 JACKS—Templeton, Kenly & Co. has issued a 48-page Catalog No. 45, giving valuable suggestions on the care, lubrication and maintenance of Simplex jacks including automatic lowering, mine timbering, car siding, geared, cable reel, cable tensioning, pole pulling, mine post pulling, pull rod, track, pipe pulling and pushing, journal, rail pulling and expanding, push and pull, mine roof and hydraulic jacks. Repair parts for the various types and sizes are illustrated and listed, facilitating the ordering of replacement parts.

23 LOCOMOTIVES — H. K. Porter Co., Inc., has released a 44-page catalog, L-45-A, describing and illustrating both narrow and standard gauge Diesel-electric locomotives ranging from 30 to 100 tons. Complete specifications, engineering and construction data are given, also information for selecting proper type of locomotive.

24 LUBRICATORS — Stewart-Warner Corp., Alemite Division, has released Forms 22-72, 22-71, 22-93 and 22-94, describing and illustrating the centralized, progressive, dual and dual manifold systems of lubrication, respectively. Cross-section views showing steps in valve operation of the different systems are also given.

25 MIXERS—Kwik-Mix Co. has issued a 12-page book describing and illustrating the Kwik-Mix 16-S Dandie 3-bag size concrete mixer, including the tilted flow-line discharge chute and the selective skip shaker.

26 PUMPS—The Deming Co. has issued a 20-page booklet containing illustrations and basic information about various standard types of centrifugal pumps, which information is applicable to all makes of centrifugal pumps. The booklet can be used as a text book to assist in the application and selection of centrifugal pumps of all standard types.

27 PUMPS—The Jaeger Machine Co. has released a new catalog, P45, describing and illustrating various models of enclosed type pumps up to 240,000 g.p.h. capacity. Illustrations showing the pumps in action are included in the bulletin.

28 RADIANT HEATING—A. M. Byers Co. has published a very interesting 53-page booklet describing and illustrating the use of wrought iron pipe for radiant heating in all types of structures. The history, theory and advantages of radiant heating is thoroughly explained. Operation, installation, coil design and location, diagram of piping, selection of pipe, and typical installations in homes, churches, hospitals, factories and other public buildings are illustrated in these bulletins.

29 RECTIFIER—General Electric Co. has released bulletin GEA-4317 describing and illustrating a unit-type, metal-enclosed rectifier rated 27,000 volts d-c, 100 milliamperes, and consisting of a kenotron rectifier and complete control equipment. This rectifier can be used for testing of electric equipment, precipitation, induction heating, radio, and miscellaneous industrial and electronic applications which require high-voltage d-c.

30 SCRAPERS—R. G. LeTourneau, Inc., has released a 12-page bulletin, Form No. TP-122, describing and illustrating the Super C Tournapull. The bulletin also contains views of the equipment in action on roads, airports, dams, reservoirs, railroads, mines and other jobs.

31 SHOVELS—Bay City Shovels, Inc., has published Catalog L, describing and illustrating crawler and pneumatic tire-mounted shovels, cranes, draglines and hoes, trailers and dragline buckets. The catalog consists mainly of large, clear illustrations of the equipment in action. Specifications to designate size and capacity are also included.

32 SLUDGE PUMPS—Claude B. Schneible Co. Bulletin No. 1244 describes and illustrates vertical and horizontal type sludge handling pumps designed to resist clogging and wear and ranging in sizes and capacities from 2 to 500 g.p.m. Cross-sectional views, diagrams and specifications are also shown.

33 SPLICES — The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., has issued a new bulletin describing the extensible-tip splice for belts. Installation photographs and schematic diagrams describing the splice are also included.

34 STEEL SHAFTS—DeLaval Steam Turbine Co. has issued Bulletin WG-545, containing useful data and short cuts involved in determining required steel shaft sizes. Tables, curves and formulas for computing torque, deflection angle of thrust, bending moment, stresses, and other factors are included.

35 TRACTORS—Caterpillar Tractor Co. has released a booklet entitled "It Pays to be a Caterpillar Owner" which describes and illustrates tractors, motor graders and engines in action on various jobs. A 30-page catalog, Form 8869, has also been published, describing and illustrating the Diesel D8 tractor. Specifications, list of special attachments, and views of the tractor in action are also shown.

36 TRUCKS—The Euclid Road Machinery Co. has published a beautifully illustrated booklet entitled "Euclid Trucks in Mines and Quarries" which contains natural color as well as black and white illustrations of 16 mine and quarry operations in many sections of the United States. This 32-page book highlights typical applications of rear-dump and bottom-dump trucks.

37 TRUCKS—R. G. LeTourneau, Inc., has issued a 4-page folder, Form No. TR-106, describing and illustrating Model W210 Tournatrailer for hauling rock and other material from shovel or dragline.

38 WASHING PLANTS — Pioneer Engineering Works new 20-page catalog, Form No. 556, describes and illustrates Models 300-WA, 300-W, and 305-W crushing, screening and washing plants. Catalog includes large illustrations of these and other models in operation in various parts of the country. Accessories such as jaw and roll crushers, vibrator and revolving screens, belt conveyor, storage bin, etc., are also illustrated.

Detach and Send Us This Post Card

(4-46)

ROCK PRODUCTS, 309 W. Jackson Blvd., Chicago, Ill.

I would like to have the items circled.

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38							

Name ..... (Position) .....

Company .....

Street .....

City & State .....

AMERICAN EXPLOSIVES

From well-located plants and distributing magazines, AMERICAN explosives and blasting supplies are available for delivery throughout the eastern and middle-western sections of the United States. Produced under intensive research, chemical control, inspection and unremitting care in manufacture, there is an AMERICAN explosive suited to your requirement.

• *Capable field engineers are available at your call.*

★ **HIGH EXPLOSIVES**

★ **PERMISSIBLES**

★ **BLASTING POWDER**

★ **BLASTING ACCESSORIES**

American Cyanamid & Chemical Corporation

A Unit of American Cyanamid Company

30 ROCKEFELLER PLAZA • NEW YORK, N. Y.

EXPLOSIVES DEPARTMENT

SALES OFFICES: PITTSBURGH, Pa. Bluefield, West Va. Scranton, Pa. St. Louis, Mo. Chicago, Ill. Pottsville, Pa. Hazleton, Pa. Maynard, Mass.

Sand-Lime Brick Industry to Be Revived

JUDGING by the enthusiasm of the few sand-lime brick manufacturers who attended the convention of the Sand-Lime Brick Association in Chicago, March 11 and 12, they will soon return to the manufacture of sand-lime brick and block in preference to the concrete products they have been making in recent years. Although, by use of their pressure steam kettles, and high pressure steam curing, they have been able to make superior concrete building units, with less cement, they have received little consideration from the portland cement industry. The results these manufacturers have obtained with proper pressures, temperatures, and time of curing have not been obtained by many concrete products manufacturers by short-cut methods. The result is that there is as yet no definition of "high pressure steam curing."

Most of the discussion had to do with shop methods, proper sand gradation, etc. Several new plants are under consideration. J. Morely Zander, Saginaw, Mich., is the outstanding expert in the industry, and he is serving as consulting engineer to the industry. He emphasized many times that the secret of a good sand-lime product, as well as a good concrete product, is a properly graded sand. Usually the sizes most lacking in commercial sands for this purpose are the minus 50- and minus 100-mesh sizes.

In high pressure steam curing of concrete products, a problem of scaling on the pallets has been troublesome. In most cases it has been necessary to chip off the scale with compressed-air chisels. However, it appears that a paraffine oil painting will help prevent the formation of the scale. As the pallets are increasing in cost, this is no insignificant item.

Raw vs. Hydrated Lime

The Tuesday morning session began with a short discussion on the advantage of raw lime versus hydrated lime for use in brick. Mr. Zander pointed out that raw lime is 97 percent pure with 3 percent impurity, while hydrated lime, though it is 100 percent pure, is comprised of 24 percent water.

Most of the discussion centered around the advantages of high pressure curing of concrete products. Emphasis was placed on the fact that high pressure curing involves a chemical process, and many producers make no attempt to understand the operation from that standpoint. Ideally, under high pressure curing, silica flour (or fine sand) will combine with the lime in the portland cement at high temperatures to form calcium silicate. In low pressure curing this combination does not occur, and the 20 percent of lime set free in the hydration of portland cement has not served its

purpose. Producers often make up for this omission by the addition of more cement, believing that this will produce a brick of equal quality.

A second point raised on high pressure curing was the relationship between temperature and pressure. It was pointed out that they rise and fall together, and a producer cannot obtain the desired high temperature if he allows his pressure to fall.

Cement Production

BUREAU OF MINES reports that production of finished cement during December, 1945, totaled 9,772,000 bbl. or 32 percent above that reported for December, 1944. Although the December, 1945, total represents a decrease of 12 percent from the October peak of 11,104,000 bbl., it follows the normal seasonal trend. Mill shipments of 6,100,000 bbl. were 33 percent above those reported for the corresponding month of the previous year. Mill stocks on December 31, 1945, totaled 16,423,000 bbl. or 17 percent below the December figure of the previous year. However, they represent an increase of 29 percent over the November 1945 total. Demand for cement by districts was higher than in December, 1944, in all districts except California and Oregon-Washington, which show decreases, respectively, of 12 and 5 percent. The increases range from 6 percent in Virginia-Georgia-Florida-Louisiana, to 93 percent in Ohio.

The following statement gives the relation of production to capacity, and is compared with the estimated capacity at the close of December, 1945, and of December, 1944.

RATIO (PERCENT) OF PRODUCTION TO CAPACITY

	Dec. 1944	Dec. 1945	Nov. 1945	Oct. 1945	Sept. 1945
The month	36.0	48.0	54.0	55.0	50.0
12 months	37.0	43.0	42.0	41.0	40.0

Pavement Yardage

AWARDS of concrete pavement for February and the first two months of 1946 have been announced by the Portland Cement Association as follows:

SQUARE YARDS AWARDED

	During Feb. 1946	During 1st Two Months
Roads	1,474,831	2,421,316
Streets and Alleys	301,438	787,109
Airports	42,774	251,531
Total	1,819,043	3,459,956

Tennessee Barites

PRODUCTION possibilities of two barite deposits near Friendsville, Tenn., are appraised in a brief report and a map issued by the Geological Survey of the Department of the Interior. Copies of Preliminary Map 3-191, of the Strategic Minerals Investigations Series, which includes the report, can be obtained from the Director, U. S. Geological Survey, Washington 25, D. C.

Southern California Masonry Meeting

FIRST annual conference of the Concrete Masonry Manufacturers Association of Southern California was held February 19 in Los Angeles, Calif. E. P. Riley, association president, gave the address of welcome at the luncheon, opening the meeting. The program included an interpretation of priorities order PR.33, and how it affects concrete block manufacturers, which was followed by a discussion of manufacturing methods and new developments in the industry under the direction of Jack Allen, association vice-president.

The meeting also discussed the report on tests of panels made of concrete block reinforced to withstand simulated earthquake vibrations and stresses which was conducted under the direction of Sam Hobbs of the Portland Cement Association. An explanation of the use of the detail sheet published by the Association was given by A. Mackintosh, engineer.

Another project of the association is the employment of a well-known testing laboratory to make tests of block made by subscribing companies. The laboratory picks up three block from each plant every three months, the inspector coming unannounced and at different times. Tests will be made of accuracy in alignment of block, compression tests, etc., the laboratory certifying to the secretary of the association the plants that make block meeting the standards set. The secretary in turn notifies the building departments of the various municipalities. Publicity covering this program will be sent to architects and engineers. Cost of this inspection is paid by each plant at the rate of $2 per sample plus 10c a mile for pick-up charges.

In the discussion covering plant practices, Mr. Garber of the Pomona Concrete Block and Products Co., Pomona, Calif., reported that he had attached an automatic feed to a No. 2 Flam machine which permitted the use of four pallets a minute, stepping up production to 5500 eights a day or 7500 sixes. Jack Vollmer of the Vollmer Concrete Products Co., Colton, Calif., and Ed Ripley of the General Concrete Products Co., Van Nuys, Calif., reported that by using a Scoopmobile a cleaner yard was maintained, the plant had more flexibility, and trucks also could be loaded with this unit.

All officers and directors were re-elected. Membership has been increased from 24 to 40 producers.

Add Dredge Euipment

TRI-STATE MATERIALS CORPORATION, Charleston, W. Va., has announced the purchase of the tugboat, Bett Gardner. Four new steel sand and gravel barges also have been ordered from the Dravo Corporation, Pittsburgh, Penn.

Lime Fellowship Reports

REPORTS from the National Lime Association Fellowship at the New Jersey Agricultural Experiment Station tell of three field experiments on liming materials now in progress at the College Farm. One is being conducted on alfalfa, another on continuous cultivation, and a third on variation of crop. An area for the test was selected and soil samples were taken about every 50 ft. The samples were dried and analyzed, a determination being made of the exchangeable calcium, magnesium, potassium and available phosphorus. Plots were marked in the area and ground calcitic limestone, hydrated and burned lime, ground dolomitic limestone and gypsum were added to the soil in varying amounts in each plot. A 5-10-10 fertilizer was supplied as a top dressing, and some plots received supplemental treatments of potassium and trace elements. Ranger alfalfa was planted without a companion crop. Further information on the alfalfa test as well as the experiments on continuous cultivation and variation of crop will be included in reports with future issues of *Limeographs*.

Useful Clay-Sand Deposit

RAW MATERIALS from a sand-clay deposit near Waco, Texas, can be utilized in refractories and fire-clay brick, in the manufacture of plate and window glass, in structural brick, and in many other industrial applications, according to an investigation of the U. S. Bureau of Mines. The sands in the deposit are classified as industrial sands, and the clay in the mixture is a high quality kaolin needed in the manufacture of refractories, according to the Bureau's report. For some industrial uses the mixture can be used almost as it is found in the natural state.

A detailed report on the possible uses as well as a geologic description of the area can be obtained in Report of Investigation 3825, "The Industrial Utilization of a Sand-Clay Mixture from Falls and Robertson Counties, Texas," from the Bureau of Mines.

Barite Production

BUREAU OF MINES reports that several new producers of barite began operations in 1945. Among the new producers are Missouri Barite Co., 2305 Niels Esperson Bldg., Houston 2, Tex., with washer in Camden County, Mo.; and B. C. Wood, Sweetwater, Tenn., with washer at Cedar Fork Community, Loudon County, Tenn.; and B. H. Schwartz, Barnard, N. C. Barium Products Ltd., Newark, Calif., opened a deposit at Alamanor, Calif., and California-Nevada Barytes Mines, 766 50th Ave., Oakland, Calif., reopened their deposit at Tonopah, Nev.

FINANCIAL

RECENT DIVIDENDS

Bessemer Limestone & Cement Co. pfd.	$ .75	April 1
Lone Star Cement Corp.	.62½	Mar. 31
Pacific Coast Aggregates, Inc.	.05	Mar. 22
Pennsylvania Glass Sand Corp. 5% pfd.	1.25	April 1
Schumacher Wall Board Corp.	.10	Mar. 30

BLUE DIAMOND CORPORATION, Los Angeles, Calif., reported a net income of $236,454 for the year ended December 31, 1945, which compares with $123,946 for the calendar year 1944. Sales in 1945 were $5,524,901 as against $4,941,973. President W. J. Van Valkenburgh reported to the stockholders that the company has elected to accelerate amortization of emergency facilities over the period of 45 months ending September 30, 1945, compared with 60 months period previously permitted and allowed.

•

BASIC REFRACTORIES, INC., Cleveland, Ohio, suffered a drop in sales due to the slump in steel production for which it furnishes refractories. Net income for 1945 has been estimated to be around $106,000, after charges. The company reported its 1944 net as $176,966. Negotiations are now in progress with the federal government for the purchase of the plant operated by the company on a rental basis at Maple Grove, Ohio. This unit has an annual capacity about double that of the largest of Basic Refractories' plants.

•

PACIFIC COAST AGGREGATES, INC., San Francisco, Calif., reported income for the years ended December 31, as follows:

	1945	1944
Sales revenue	$5,549,392	$6,081,540
Cost of sales	4,504,978	4,850,195
Selling, etc., expense	554,203	469,543
Depletion	36,451	38,814
Depreciation	234,878	231,078
Operating profit	218,882	491,910
Other income	113,925	72,730
Total income	332,807	564,640
Interest	456	499
Other deductions	26,323	5,182
Fed. income tax	99,198	220,896
Conting., etc., res.	.....	50,000
Net income	206,828	288,063
Dividends	111,142	166,714
Surplus for year	95,686	121,349
Surplus, Jan. 1	871,929	750,580
Earn. surp., 12-31	967,615	871,929
Earn., com. share	$0.37	$0.52
No. of com. shares	555,924	555,934

•

LONGHORN PORTLAND CEMENT CO., San Antonio, Texas, had a net income of $187,403 for the year ended December 31, 1945, which compares with $161,664 in 1944.

•

LAWRENCE PORTLAND CEMENT CO., New York, N. Y., reported a net loss of $134,950 for the year ended December 31, 1945, as compared with a loss of $290,131 for 1944. Net sales in 1945 were $2,084,647 as against $1,752,722 in 1944.

NATIONAL GYPSUM Co., Buffalo, N. Y., showed the following consolidated income account for the years ended December 31:

	1945	1944
Net sales	$26,742,095	$23,982,632
Cost of sales	21,758,466	19,649,387
Balance	4,983,629	4,333,245
Contract fees[2]	168,005	237,767
Gross profit	5,151,634	4,571,012
Selling, etc., expenses	3,070,101	2,937,185
Oper. profit[1]	2,081,532	1,633,827
Other income	198,048	159,198
Total income	2,279,580	1,793,024
Interest	242,326	187,199
Deb. prem., etc.	130,000	.....
Other deduct.[3]	120,226	100,677
Fed. income taxes	610,000	622,000
Excess prof. tax.	160,000	.....
Other income tax	17,515	14,602
Pr. yr. inc. tax	cr 1,103	dr 685
Net income	1,000,616	867,861
$4.50 pfd. divs.	298,158	292,420
Common divs.	345,393	339,364
Surplus for year.	357,065	236,077
Earn. surp., 1-1	3,484,914	3,248,837
Pr. yrs. accel. am.	77,171[4]	.....
Deb. prem. etc.	108,171[5]	.....
Earn. surp., 12-31	3,656,637	3,484,914
Times pfd. divs.	3.36	2.97
Earn., pfd. share.	$12.91	$13.36
No. of pfd. shares	77,480	64,980

[1] After depreciation, depletion and amortization: 1945, $1,035,958; 1944, $997,301.

[2] Under cost-plus-fixed-fee contract.

[3] Includes $73,776 (1944, $58,010) loss on disposals of plant property and equipment.

[4] After deducting $148,067 income, etc., taxes.

[5] After deducting $130,000 portion from income.

•

MEDUSA PORTLAND CEMENT Co., Cleveland, Ohio, presented the following consolidated income account for the years ended December 31:

	1945	1944
Net sales	$6,096,807	$5,205,687
Cost of sales	4,357,737	4,187,202
Selling, etc., expense	1,049,810	953,753
Depreciation & depletion	513,025	549,055
Operating profit	176,236	d 484,323
Other income	18,753	13,930
Total income	194,988	d 470,393
Interest	7,015	2,657
Other deductions	14,033	16,828
Fed. income tax	72,000	.....
Other inc. tax	7,800	1,400
Pr. yrs. tax adj.	.....	cr 4,730
Tax credit[1]	.....	191,500
Net profit	94,140	d 295,048
Preferred divs.	16,578	16,601
Common divs.	88,444	44,222
Deficit for year	10,880	355,870
Surplus, Jan. 1	2,928,348	3,284,218
Surp. cred. (net)	27,198[2]	.....
Surplus, Dec. 31	2,944,665	2,928,348
Earn., pfd. share	$34.07	Nil
Earn., com. share	0.44	d $1.76
No. of pfd. shares	2,763	2,763
No. of com. shares.	176,887	176,887

[1] Refund resulting from carry-back of excess profits credit and net operating loss deduction.

[2] Arising from adjustment of depreciation and depletion and refunds of 1943 and 1944 Federal income taxes.

Note: Operations of Canadian subsidiary consolidated above, resulted in a net profit of $1,569 in 1945 and a net loss of $12,655 in 1944.

President J. B. John and P. G. Dawson, vice-president and treasurer, in their joint report to stockholders said that due to shortages of labor until after V-J Day, two of the plants operated only part of the year. "With inventories depleted at other plants, we were unable to meet fully the demands of our customers, re-

sulting in a loss of business we otherwise would have enjoyed." Volume of cement shipped from company mills in 1945 was 9.6 percent greater than in 1944, while the cement paint department sold a greater amount of paint than in any previous year.

•

UNITED STATES GYPSUM CO., Chicago, Ill., showed the following consolidated income account for the years ended December 31:

	1945	1944
Net sales	Not stated	[1]$62,329,573
Cost of sales		44,286,278
Selling, etc., expense		8,450,723
Operating profit.	$10,569,095	9,592,572
Depreciation & depletion	2,286,048	2,290,558
Net oper. profit	8,283,047	7,302,014
Other income	744,136	481,174
Total income	9,027,183	7,783,187
Income taxes	2,480,000	2,415,000
Excess profits tax.	2,195,000	1,141,000
Net income	4,352,183	4,227,187
Preferred divs.	547,554	547,554
Common divs.	2,395,024	2,394,280
Surplus for year.	1,409,605	1,285,353
Earn. surplus 1-1	33,754,458	32,469,105
Contingency res.	cr 876,766	
Earn. surp., 12-31	36,040,829	33,754,453
Times pfd. divs.	7.95	7.72
Earn., pfd. share.	$55.64	$54.04
No. of pfd. shares	78,222	78,222

[1] From SEC report.

Note: Company is subject to renegotiation for year 1945; however, it is believed no adjustment will be required.

•

MISSOURI PORTLAND CEMENT CO., St. Louis, Ill., presented the following statement of income for the years ended December 31:

	1945	1944
Net sales	$3,515,933	$3,566,816
Cost of sales	2,382,057	2,558,891
Selling, etc., expense	488,214	452,060
Depreciation & depletion	485,259	431,761
Operating profit	160,403	124,105
Other income	26,016	25,368
Total income	186,419	149,473
Other deductions	23,610	6,721
Income taxes[1]	58,811	[2] 18,000
Net income	103,998	124,752
Dividends	214,205	211,805
Deficit for year	110,207	87,053
Earn. surplus, 1-1	1,078,208	1,165,261
Earn. surp., 12-31	968,001	1,078,208
Earned per share	$0.36	$0.44
Number of shares	287,206	282,406

[1] No provision deemed necessary for excess profits tax.

[2] Less approximately $26,000 tax reduction resulting from loss on sale of non-operating property, which loss was charged against reserve provided therefor in prior years.

•

SCHUMACHER WALL BOARD CORP., Los Angeles, Calif., reported an operating profit of $307,033 for the year ended April 30, 1945, as compared with $333,025 in 1944. Sales for the year ended April, 1945, were $1,820,522 as compared with $1,925,192 for the year ended April 30, 1944.

•

OREGON PORTLAND CEMENT CO., Portland, Ore., showed a net profit of $93,960 for the year ended December 31, 1945. This compares with a profit of $114,239 for 1944.

•

ARUNDEL CORPORATION, Baltimore, Md., reported a net income of $750,104 for the year ended December 31, 1945 as against $653,297 in 1944.

Manufacturers' News

American Brake Shoe Co., Chicago Heights, Ill., has announced that Horace A. Deane, works manager of the brake shoe and castings division, has been appointed a vice-president of the division.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has named Ralph A. Powers as engineer-in-charge of electronic engineering. He succeeds J. M. Cage, who has resigned.

Smith Engineering Works, Milwaukee, Wis., announces that Gerald L. Smith, who was granted a leave of absence to serve as an officer in the U. S. Navy, has returned to the company as vice-president in charge of sales. H. H. Schaper will continue in his position of assistant sales manager. Donald D. Barnes, formerly executive vice-president and sales manager, will continue in his position as executive vice-president. Charles F. Smith is president and treasurer of the company; A. L. Munro is secretary and chief engineer; H. H. Rumpel is works manager; W. G. Simerson is assistant treasurer and office manager; and E. P. Farrill is assistant secretary. Elmer E. Kraig is chief draftsman; Howard Neher is plant superintendent; and Thomas S. Smith is service engineer.

Gerald L. Smith

Wellman Engineering Co., Cleveland, Ohio, has elected W. C. Swalley as vice-president in charge of sales. A. J. Lichtinger, vice-president, has been made a member of the board of directors.

B. F. Goodrich Co., Akron, Ohio, has named J. E. Gulick as general manager of the tire manufacturing division, succeeding A. W. Phillips, who has resigned.

Athey Products Corp., Chicago, Ill., announces the appointment of A. T. Marchuk as production manager. Mr. Marchuk joined the company in 1936 and served successively in the shipping and receiving department, as traffic manager, as supervisor of the order department, in the sales department, and as controller of sales and production schedules.

Caterpillar Tractor Co., Peoria, Ill., has announced the appointment of Kenneth F. Park, sales development manager, to the newly-created post of engineering consultant on all matters pertaining to the earth-moving field, and will serve the three sales divisions which include the entire United States and Canada. Mr. Park's record goes back to 1909 when he became engaged in surveys and railroad location work in British Columbia. Working as chain and rodman he pursued his civil engineering studies at night. In 1915, he worked on the project of locating the town sites of Anchorage and Seward, Alaska. Several years later, he was employed in surveys on Western dam construction and later in charge of construction of important California highways. Prior to joining Caterpillar Tractor Co. he was field chief engineer for R. G. LeTourneau, Inc.

Kenneth F. Park

American Chain & Cable Co., Inc., Bridgeport, Conn., announces that Wilmot F. Wheeler has been elected president, succeeding the late William T. Morris. Cyrus N. Johns has been made

National Supply Co., Springfield, Ohio, has appointed M. P. Stine as district manager at St. Louis, Mo., to replace E. F. Haberkern who has resigned.

International Paper Co., New York, N. Y., has opened a branch sales office at 45 Milk St. in Boston, Mass. A. G. Clarke is district sales manager and his territory covers the New England states and New York State with the exception of Greater New York City.

Westinghouse Electric Corp., Pittsburgh, Penn., has announced the appointment of Carl E. Nagel as manager of editorial service. He will be responsible for the company's technical and trade magazine articles.

Roy Darden Industries, Southwest Division, Inc., Atlanta, Ga., has announced the recent appointment of Mert W. Messer as vice-president of the company. Mr. Messer has had a long association with the concrete masonry industry through his previous affiliation with the Superock Co. and the Concrete Block Plant Equipment Co., Birmingham, Ala., and, previous to that, in the construction industry. In his new capacity, Mr. Messer will shift his field of activity from the southeast to the southwest and west from offices in Dallas, Texas. His sales and engineering activities will comprise the territory from Arkansas to Southern California and Mexico.

Mert W. Messer

Brooks Equipment & Mfg. Co., Knoxville, Tenn., announces the appointment of John W. Peters, sales representative, as acting sales manager, replacing R. S. Tucker, who has resigned. H. H. Houston, Jr., will be in charge of sales promotion for the manufacturing division.

Stephen Flam, Van Nuys, Calif., manufacturer of concrete block machinery has announced the erection of a new plant to manufacture concrete mixers. It is expected the plant will be ready May 1.

United States Rubber Co., New York, N. Y., has appointed Walter F. Spoerl as general sales manager of the mechanical goods division, succeeding Herman A. Everlien, who died February 21 after 43 years with the company.

LaPlant-Choate Mfg. Co., Inc., Cedar Rapids, Iowa, announces that E. R. Galvin has been named executive vice-president, general sales manager and member of the board of directors of the company. He was formerly president of Tyson Bearing Corp., Massillon, Ohio. At the same time, it was announced that S. L. Myers, who has been vice-president and general sales manager during the past year will become vice-president and export sales manager, while Jay M. Fetters, former export manager, will become manager of foreign development.

E. R. Galvin

Marion Steam Shovel Co., Marion, Ohio, it is announced, is now controlled by a group headed by E. G. Diefenbach of New York, N. Y., who has been appointed chairman to succeed J. M. Strelitz, who remains as a director. New board now comprises Hamilton Pell, O. B. Hewitt, C. G. Terry, S. R. Grant, L. T. Rubenstein, M. E. Montrose and Mr. Sterlitz. The company plans to spend approximately $1,000,000 on rehabilitation of plant and facilities.

executive vice-president, and Stanley Mann, treasurer. Mr. Wheeler has been with the company since 1916, was elected a director in 1919 and treasurer in 1920. He has been executive vice-president and treasurer since 1936. Mr. Johns joined the Page Steel & Wire Co., now a division of the company, in 1913, and was made general manager in 1933. In 1937 he was elected a director of the company and in 1940 vice-president in charge of operations of all plants. Mr. Mann has been a director of the company since 1936 and assistant treasurer since 1943. He was treasurer of Standard Chain Co. when it was acquired by the company in 1917.

Nordberg Mfg. Co., Milwaukee, Wis., has announced the election of F. H. Kilberry as executive vice-president and a director of the company, succeeding C. E. Stryker, vice-president and assistant to the president, who has resigned to accept the position of president of the Adel Precision Products Corp., Burbank, Calif. Prior to his association with the company, Mr. Kilberry was president of the Atlas Imperial Diesel Engine Co., Oakland, Calif. He joined that company in 1928 and was appointed assistant to the president and a director one year later, and in 1930 was made general manager. Two years later he was elected vice-president and general manager, and served in that capacity until his election to the presidency in 1938. Mr. Kilberry resigned from the presidency of Atlas Diesel in May, 1945, and has since then been associated with Nordberg Mfg. Co.

F. H. Kilberry

International Harvester Co., Chicago, Ill., has announced the following changes in branches and personnel: Separate motor truck branches have been established at San Antonio and Houston, Texas. T. R. Moulder, formerly assistant manager in charge of motor trucks, has been named manager of the new San Antonio branch. C. T. Helin has been advanced from assistant manager to manager of the Houston branch. E. M. Moore has been appointed assistant manager at Houston. M. J. Gowen, assistant manager at Cincinnati, has been made manager of the Richmond, Va., branch. L. C. Carroll replaces Mr. Gowen as assistant manager at Cincinnati. C. V. Ellis, assistant manager of the Topeka branch, has been transferred to the Kansas City branch as assistant manager.

Bemis Bro. Bag Co., St. Louis, Mo., has purchased the Indiana Cotton Mills at Cannelton, Ind. A new company is being organized to operate the plant. Present personnel will be retained. Lee Rodman, president of the Indiana Cotton Mills, is retiring from active management.

The Osgood Co., Marion, Ohio, announces that Lieut. Robert Maynard, recently discharged from the U. S. Navy, has returned to his former position as export manager of the Osgood Co. and the General Excavator Co., Marion, Ohio.

Link-Belt Co., Chicago, Ill., has announced that Lieut. Col. Joseph J. Gilbert, recently discharged from the U. S. Army Sanitary Corps, has returned to the company as sales engineer in the sanitary engineering division, which position was vacated by M. B. Tark on his retirement in 1944. Mr. Gilbert's headquarters will be at the Philadelphia, Penn., plant.

Sauerman Bros., Inc., Chicago, Ill., announces the following new distributor appointments: Intermountain Equipment Co., Boise, Idaho; Robison Machinery Co., Salt Lake City, Utah; Highway Equipment Co., Cincinnati, Ohio; Jeff Hunt Machinery Co., Columbia, S. C.; and Constructors Equipment Co., Denver, Colo.

HERE'S WHY THEY ASK FOR 'INCOR'

'INCOR' SAVED

~~$1.45~~ $2.81

PER CU. YD. OF CONCRETE IN PLACE

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

WHEN your customers ask for 'INCOR'—America's FIRST high early Portland cement—they are asking for 24-hour service strength, in order to cut time and form costs to the bone. 'Incor' assures one-day stripping strengths with standard mixes—20 years' performance proves it!

With time and form costs increasing by leaps and bounds, 'Incor' advantages are doubly important to your customers. On this 6-story apartment house, built in 1937, 'Incor' saved 7 working days, with 40% less forms —*a net cash saving* of $1.45 a cu. yd. on 2270 cu. yds. concrete in place. At today's costs, this NET SAVING with 'Incor' would amount to $2.81 a cu. yd. of concrete!

Savings like these explain why leading Ready Mix Operators make 'Incor'* 24-Hour Cement available at all times, as part of their good service.

*Reg. U. S. Pat. Off.

LONE STAR CEMENT CORPORATION

Offices: ALBANY • BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS • JACKSON, MISS. KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK • PHILADELPHIA • ST. LOUIS • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 25,300,000 BARRELS ANNUAL CAPACITY

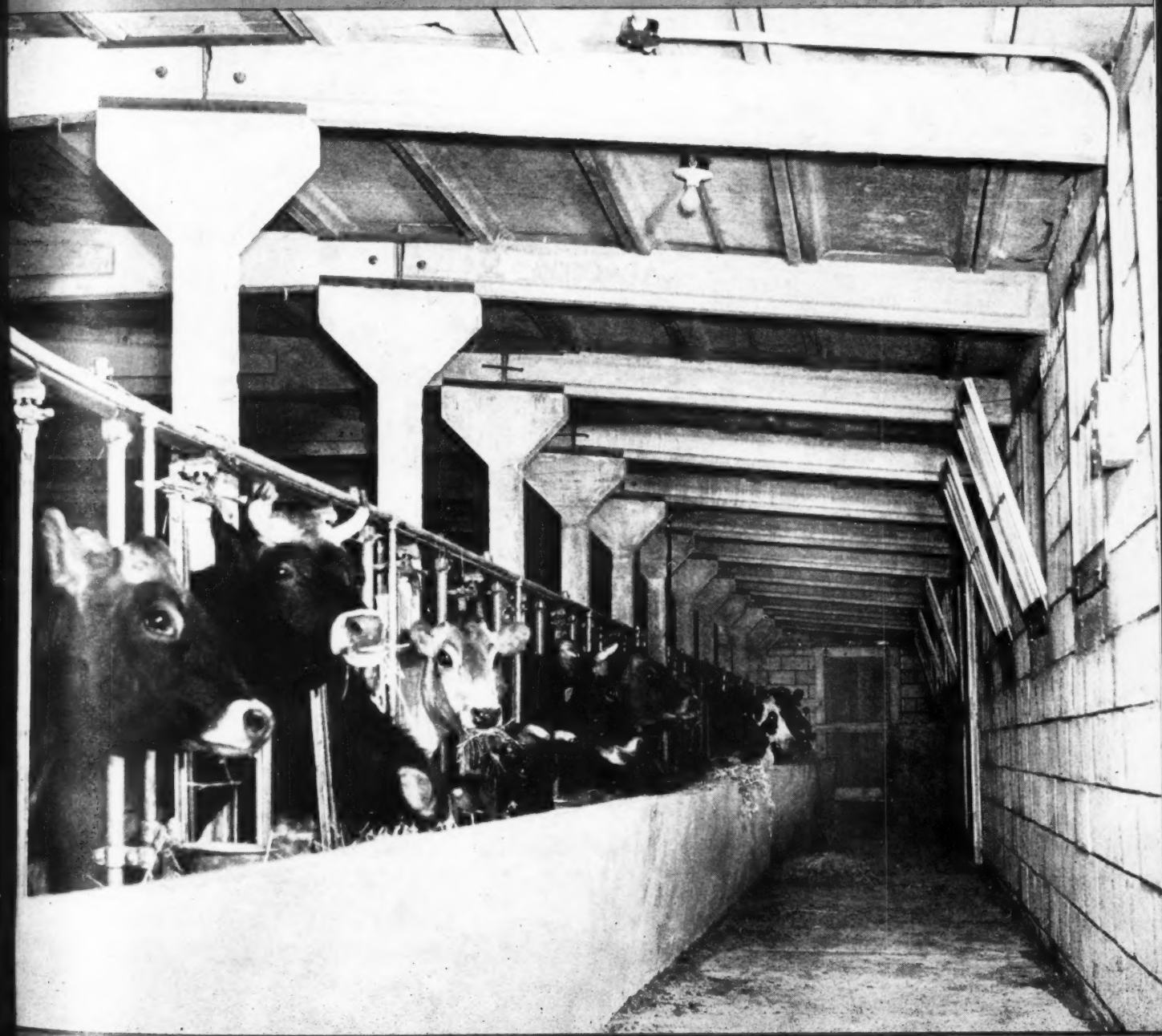
ROCK PRODUCTS'

CONCRETE PRODUCTS

and Cement Products

APRIL
1946

All-concrete dairy barn. Joists, roof slabs, and block supplied by Otto Buehner & Co., Salt Lake City, Utah



Super VIBRATOR CONCRETE BLOCK MACHINE

GEORGE SUPER V

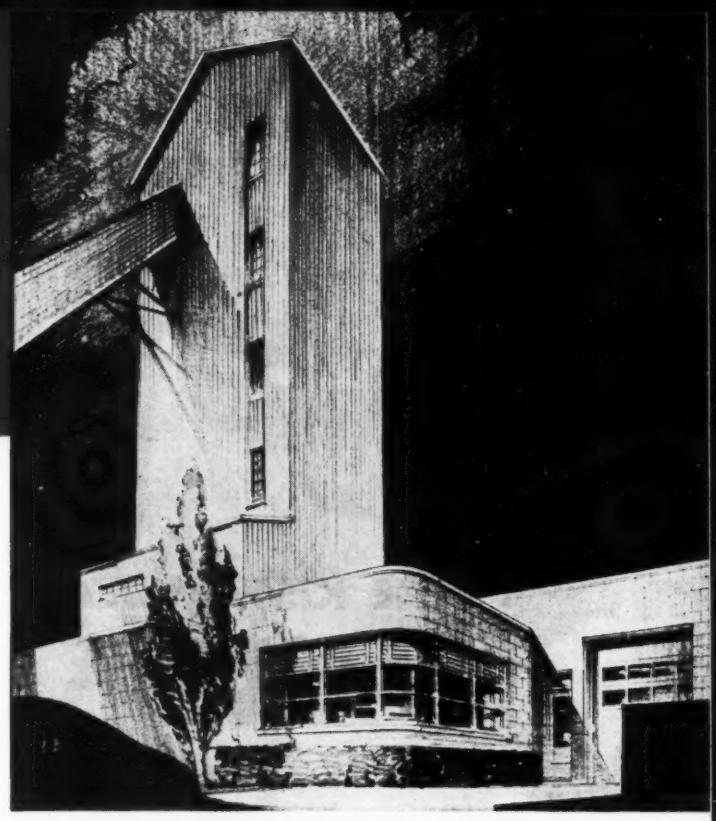
CAPACITY
300
BLOCKS
PER HOUR

- SUPER VIBRATION is the GEORGE SUPER V answer to the problem of QUALITY production of masonry units. It guarantees uniform, built-to-last blocks.
- SUPER VIBRATION gives a dense outer surface to the finished WATER PROOF block because it allows use of a wetter mix.
- GEORGE SUPER V concrete block machines will operate at a rate of 250 to 300 blocks per hour. Designed simplicity assures LOW COST PRODUCTION.
- Every GEORGE SUPER VIBRATOR block machine and every piece of accessory GEORGE SUPER V machinery is mechanically RIGHT.
- GEORGE SUPER V machinery is ruggedly and honestly built to provide efficiency, economy and dependability.
- GEORGE SUPER V products are built to meet all requirements of block manufacturers and sell at prices that make them money savers.

F. C. GEORGE MACHINE CO.
100 S. WESTMORELAND DRIVE
ORLANDO, FLORIDA

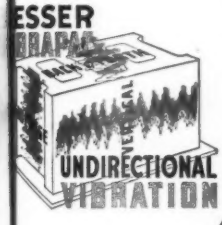
BESSER

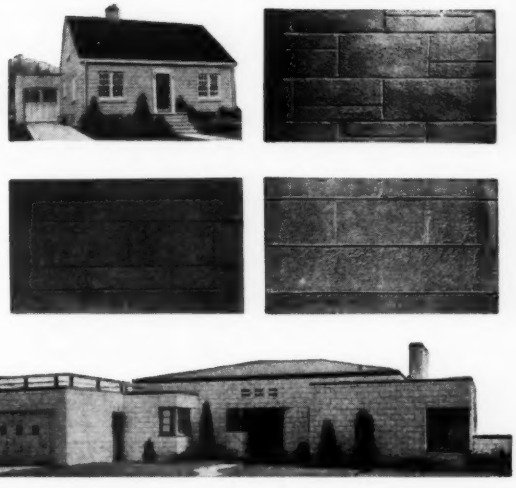
COMPLETE BLOCK MANUFACTURING *Equipment Service*



The Besser Mfg. Co. provides a complete plant engineering service covering all necessary equipment for handling and processing aggregates and other materials and all operations of manufacture, curing, handling and loading for delivery of blocks. Your requirements are our concern. Tell us about your present facilities as well as your plans for future expansion. We will gladly work with you to help make your business more serviceable and profitable.

Would you like to inspect some efficiently operating BESSER equipped plants? We will gladly arrange with you to see them.





A few of the many attractive concrete masonry designs that add beauty as well as utility.

BESSER SUPER VIBRAPAC with BESSER OFF-BEARING HOIST

— the ideal combination for Concrete products plants. There's a BESSER VIBRAPAC for any required production. BESSER SUPER VIBRAPACS provide for daily (8 hr.) production from 4800 8"x8"x16", or equivalent in smaller sizes. Plants can be designed for any expected growth requiring additional machines. Ask for literature.

BESSER MANUFACTURING COMPANY

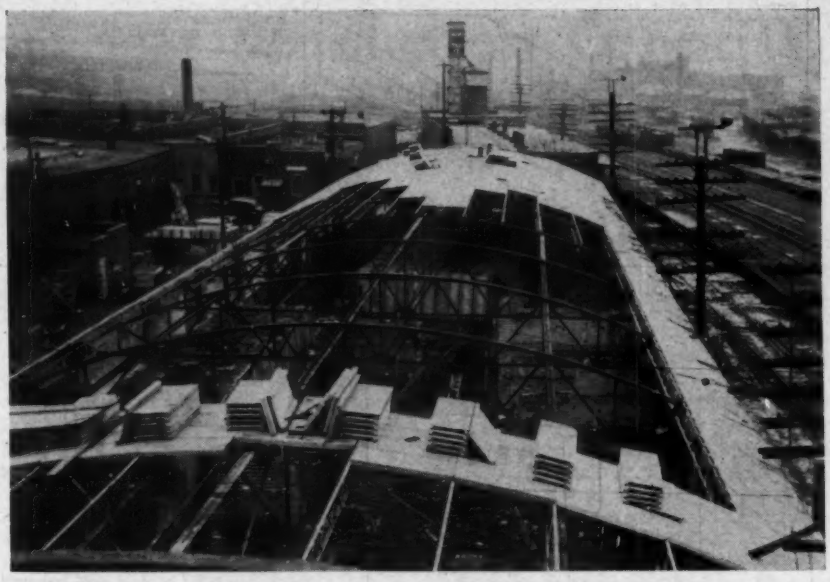
Complete Equipment for Concrete Products Plants

204 46th Street, Alpena, Mich., U. S. A.

Important Patent Notice. Licensed under the Gelbman basic vibration patents. Undirectional vibration licensed under Flam patents. The Vibrapac combines vibration with exclusive patented Besser Plain Pallet principle.

The Precast Slab and Tile Co., St. Louis, Mo., is one of the largest manufacturers of concrete floor and roof units. Use three types of lightweight aggregates

By R. M. SCHNEIDER



Warehouse under construction showing precast concrete roof slabs being installed. In the background may be seen the plant of Precast Slab and Tile Co.

Manufacture a Nailable Concrete Slab

A COMPARATIVE NEWCOMER to the field of precast concrete products has been making an enviable record for production and sales in the St. Louis area. The Precast Slab and Tile Co., St. Louis, Mo., started operation about three and one-half years ago with 20 employes. Today it has grown to one of the country's largest producers of precast concrete floor and roof slabs and employs 160 to 200 workers. During the last year it produced four to five million square feet of slab for plant construction for about 140 different industrial and commercial concerns. The entire precast roofing for four of Ford's new plants is being supplied by the company as well as the roof for the Chrysler plant at Dayton, Ohio, and a new American Stove Co. plant now under construction. Over 2,000,000 sq. ft. of slabs were furnished for construction of the plants that developed the atomic bomb. In the St. Louis territory alone, the company has produced roofing slabs for such construction jobs as the R.F.C. Warehouse, the Purex Corp., and the U. S. Engineering Warehouse No. 5, Curtis Wright, Chevrolet and Monsanto Chemical plants.

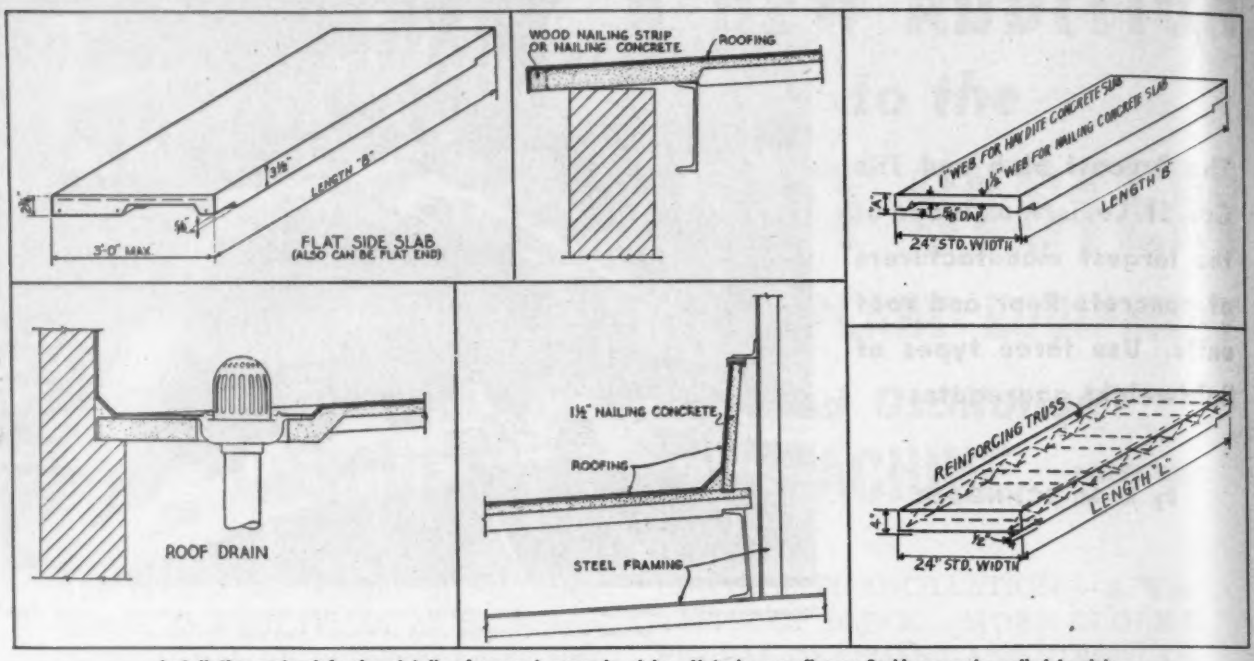
Up to V-J Day production was 100 percent for war plants, but private industry is expected to more than take up the slack. When the war stopped, private industry almost doubled its orders. This expanded volume of business is attributed more to production of a high-quality unit than to any clever merchandising. Advertising is limited to a four-page pamphlet and an advertisement in Sweet's catalog.

Production line with precast slab forms stacked one on top of the other after pouring

Main Product Is Roof Slab

The main product of the Precast Slab and Tile Co. is a precast lightweight reinforced concrete roof slab. To meet the different requirements for roof slabs three types have been developed—a Haydite slab, a Zonolite (vermiculite aggregate) slab, and, more recently, a nailable concrete slab. The Haydite slab, weighing 11 to 13 lb. per sq. ft., is made in channel form 24 in. wide with a 1-in. thick web and a 2¾- or 3½-in. flange. The length can be varied from a 4-ft. to an 8-ft. 4-in. span. The concrete has a 28-day compressive strength on 6- x 12-in. cylinders of not less than 2500 p.s.i These slabs are designed for floors or roofs where a combination of strength and light weight is desired and where insulation is not important. The Zonolite slab is designed for use where more insulating value is desired, the slabs being of Zonolite water-repellent concrete. These slabs are 24 in. wide x 3 in. and 4 in. thick, 4 ft. to 10 ft. long, and weigh 11 lb. per sq. ft.

The third type of slab, a patented development of the Precast Slab and Tile Co., is a nailable concrete slab. It is cast in a shape similar to that of the Haydite slab except that it has a 1½-in. web and 4-in. flanges.



Installation and reinforcing details of precast concrete slabs. Note how roofing or flashing may be nailed to slab

It weighs 13 lb. per sq. ft. and the concrete has a 28-day compressive strength of 1300 p.s.i The central section of the slab is cast with the conventional Haydite mix, leaving a 4-in. space on each end of the slab. This space is filled with a mixture of Zonolite, Haydite and portland cement, comprising the nailing edge. The two mixes are cast monolithic so that the junction between them is not noticeable. These edges can be used for nailing on guttering or for nailing shingles or slate to sloping roofs. Tests on the material are said to have shown capacity for withstanding a nail pull greater than that of oak. These three types of slabs, when used for roofing construction, can be used alone with a black mastic as a filler or with a 2-in. coating of Zonolite concrete insulation.

Manufacturing Operations

The main production building of the plant is long and comparatively narrow, with the mixing operation and storage bins located in the center. Two rows of pouring forms extend from the center along the length of the building.

Portland cement, Haydite aggregate of minus ⅜-in. size, and water comprise the mix. The cement is unloaded in bag form from railroad cars and is elevated and dumped into overhead storage bins. Haydite is trucked in and dumped into a floor bin. A bucket elevator feeds it into an overhead storage bin adjoining that for the cement. From this point the process is gravity flow, the aggregate and cement being weighed out from the overhead bins into a Concrete Transport Mixer Co. paddle type batch mixer. From there the concrete is discharged through a chute to a ⅓-cu. yd. bucket suspended from a monorail at the ceiling of the first floor. The overhead bucket can be routed on this rail along the full length of any one of the four rows of forms.

Four metal pans, each 24 in. wide x 8 ft. 4 in. long and grooved to shape the underside of the slab, are placed side-by-side into a square wooden frame, comprise the forms. Preparation and pouring is done on an assembly-line style. A number of crews, each performing a successive operation, move down the row. One crew oils the pans to aid in giving the underside of the slab a smooth finish; another sets an end strip to determine the slab length. Wooden blocks are set in the flanges to form notches to fit over structural steel. Another crew lays bars of reinforcing steel in the flanges and wire mesh across the web. The concrete is dumped from the overhead bucket. Being of a wet consistency it is spread over the form and smoothed by hand trowels. No method of mechanical placing is used. As one row of such forms is completed the crews go back to the beginning of the row to stack a second set of forms on top of the first, and so on until the row is stacked 8 or 10 high.

Units are left to cure overnight with natural gas-fired curing stoves burning inside the curing room. Units cast one day are stripped the next. The slabs are moved to warehouses by stacking horizontally on Truckman power trucks. After a minimum of seven days' curing, again with the application of heat, they are trucked from the warehouse to loading platforms. Railroad shipping goes out on one side of the warehouse and trucking, for local orders, is on the other.

L. B. Schumacher is president of the company. J. J. Brouk is vice-president; Bert Biener is secretary-treasurer; and A. Kroeber is general superintendent.

Roof slabs of precast concrete stored on end

N. C. M. A. Considers Production Capacity on the Basis of Future Market

National Concrete Masonry Convention program discusses plant design, operating practices, curing research, and merchandising

THE FIRST postwar convention of the National Concrete Masonry Association, the 26th, held March 12-14 in Chicago, attracted approximately a thousand delegates—the largest attendance in history for the industry. There were close to 900 registrants and, as a sign of the times, there was the attendance of a number of "would be" manufacturers, many of whom were planning to enter the industry upon their return home.

There was no exposition, as such, but there was limited exhibit space provided for model display of large machinery and actual display of small handling equipment. Plant design being uppermost in the thinking of the majority, a side attraction was provision outside convention sessions for the study of typical new plant designs being adopted.

Plant design and operating practices came up for consideration in two full sessions of the convention, but research toward product improvement and merchandising were adequately covered. The convention as a whole was a pronounced success, for speakers from within the industry largely served as discussion leaders and there was splendid participation from the floor in informal swapping of ideas.

Officers

DEAN R. LYNDE, Cinder Concrete Products, Inc., Denver, Colo., was elected president to succeed C. E. Ehle, who automatically becomes chairman of the Board of Directors. Edwin P. Weese, Carbon Concrete Brick Co., Youngstown, Ohio, was elected first vice-president; Paul E. Bohm, Concrete Products Corp., South Bend, Ind., second vice-president; and Philip Paolella, Plasticrete Corp., Hamden, Conn., third vice-president. Henry Buchholz, Illinois Brick Co., Franklin Park, Ill., was re-elected secretary-treasurer. The officers and C. E. Ehle, as ex-officio member, comprise the executive committee.

Directors

Newly-elected to the Board of Directors, which was increased to 15 members for greater representation, are Philip Paolella, Plasticrete Corp., Hamden, Conn.; Les Schwalbe, Economy Block Co., Wauwatosa, Wis.; Austin Crabbs, Austin Crabbs, Inc., Davenport, Iowa; George W. Katterjohn, Katterjohn Concrete Products, Paducah, Ky.; W. Chester Smith, The Cooksville Co., Ltd., Toronto, Ont., Canada; James G. Henry, E. P. Henry and Son, Woodbury, N. J.; and R. D. Campbell, General Concrete Units Corp., Shannon, Penn. Completing the Board of Directors are Henry Muller, Jr., Forest Hills Concrete Block Co., Forest Hills, Long Island, N. Y.; Jack Freedman, Massachusetts Cement Block Co., Medford, Mass.; Claude W. Chandler, Chandler Materials Co., Tulsa, Okla.; and Fred M. Kettenring, Graystone Concrete Products Co., Seattle, Wash.

General sessions were preceded with meetings of the standing committees on curing, publications and membership and concurrent sessions of the Cinder Aggregate Division, Celocrete Aggregate Division, Haydite Aggregate Division and Waylite-Superock Aggregate Division. These division meetings are an annual event and are for the purpose of discussing problems peculiar to the various aggregates in common use.

Discussions at these meetings, generally, included a consideration of practical problems in handling the separate aggregates, proportioning, mixing times, sequence of mixing, the use of air-entraining cements, curing and methods for product improvement. For instance, where lightweight slag aggregates are used, a mixing time of 12 to 15 minutes was suggested as an ideal. Also, as an ideal, it was proposed that as a sequence in mixing with that aggregate, that the fine fraction and half the water be mixed together, that the cement then be added followed by addition of one quarter the total mixing water with further mixing and then the addition of the balance of the aggregates and water for the remaining mixing. Those who have standardized on the use of air-entraining cements reported that a more plastic concrete resulted.

The Cinder Aggregate Division meeting was principally devoted to means of processing and improving cinders from available sources of supply—of great importance under present conditions of shortage of supply of lightweight aggregates. Tests to determine the occurrence, and degree of staining from various cinders used, and the interpretation of results of these tests, which have been under concentrated study, were summarized and definite recommendations and procedure were suggested. The visual classification of cinders on the basis of staining on filter paper, used in apparatus developed for the pupose, was discussed and illustrated. The apparatus, developed by the Portland Cement Association, has been described in detail in ROCK PRODUCTS and is recommended for

President Deane R. Lynde, left, and Clarence E. Ehle, ex-president, now chairman of the board of directors

New president Deane R. Lynde, Cinder Concrete Products, Inc., Denver, Colo., with Miss Evelyn Janke, assistant secretary of N. C. M. A.

use by manufacturers of cinder concrete masonry.

It has been determined that there is a clear division between good and bad cinders. Heavy cinders will produce stains within a few weeks while light cinders, probably because they have been weathered, produce no popouts and lighter staining. In general, heavy-staining cinders are unsatisfactory for aggregate and light-staining cinders are satisfactory.

Moist, or wet, storage of cinders in stockpiles, preferably after crushing, and lime treatment of cinders are both considered satisfactory methods to improve cinder quality to the point where unsatisfactory cinders become entirely satisfactory. Wetting down of cinders in stockpiles is all that is required in most cases even where popouts are a factor, to place cinders in the light-staining classification. In the lime treatment, which consists of application of milk of lime solution, about 10 lb. of dry lime is required per cu. yd. of cinders.

PHILIP PAOLELLA, Plasticrete Corp., described his new cinder processing plant. Cinders will be received either by truck or railroad car into an elevated hopper, to be elevated for screening, crushing, re-screening and a second crushing stage to ⅜-in. minus. This single product will be elevated to a stockpile of 30,000 to 40,000 cu. yd. capacity, using a bulldozer to intermix the cinders from various sources in stockpile and to minimize the effects of segregation. They will be wetted down daily.

FRANK LEFTWITCH, Concrete Units, Inc., described the Sinter-Lite process for producing sintered fly ash-slag aggregate, pointing particularly to possible uses of the process in the manufacture of lightweight aggregates in areas where the supply of fly ash is limited. He suggested that mixtures, including clay, sand, limestone, etc., may be added to reduce carbon content below 18 percent to yield a feed material suitable for the sintering process.

PRESIDENT CLARENCE E. EHLE, in opening the general sessions of the convention, reviewed progress of the Association and pictured a very bright future for the industry. He expressed the thanks of the Association to the Portland Cement Association for its cooperation and assistance in providing office space and other facilities since the organization of the N.C.M.A., which now has offices in the First National Bank building, Chicago. He touched upon budget matters and suggested that the addition of a technical engineer to the staff would be a forward step in carrying on and extending the work of the Association.

Secretary's Report

EXECUTIVE SECRETARY E. W. DIENHART, in his annual report, complimented the Board of Directors and committee chairmen for their excellent work and assistance in conducting Association affairs. He discussed

Philip Paolella, Plasticrete Corp., Hamden, Conn., elected third vice-president

O.P.A. and other government regulations briefly and the standing of the industry with the various government agencies. A lot of work remains to be done in the industry's behalf among government agencies, he said, particularly so now since some of the individuals who have become familiar with the industry's problems have left government service. The O.P.A. remains the chief stumbling block to recovery, in his opinion. Favorable relations with C.P.A. in priorities matters were reported.

Mr. Dienhart said that his office is receiving far too many requests for information on how to start a concrete masonry business [we do too—The Editor] to answer individually, and read a letter that he mails out to acquaint new enterprisers with the facts of the business. Data contained in that letter outline conditions exactly as they are and constitute sound advice.

It comments upon the difficulties that beset the industry in procuring labor, parts and prices to permit profits. The trend toward multiple-shift operation by established producers, to supply the demand, was mentioned, in pointing to the stiff competition that will lead to losses and surplus machinery on the market.

Further, the trend toward large, low-labor cost per unit, plants costing over $100,000 and large capacity, long haul trucks was mentioned. Shortages of lightweight aggregates, which now are used in upwards of half of all units, shortages of bricklayers and fluctuations in the industry were other factors brought to attention. The letter concluded by suggesting that prospective new manufacturers canvass the area under consideration and study the competitive conditions; secure an architect for the plant to be built; consider machinery delivery delays; employ an engineer for mix designs; have adequate working capital; and join the National Concrete Masonry Association.

Committee Reports

JAY C. EHLE, chairman of the curing committee, discussed test procedure and results from studies conducted in cooperation with the Port-

Mr. and Mrs. Roy McCandless were interested visitors at the convention, Roy being a past-president and about to re-enter the industry

land Cement Association to determine results when units are cured at 200 deg. F. as compared to 130 deg. F. The latter temperature was the high of a few years ago. The tests were conducted for cinder units (high early strength cement) at the plant of Plasticrete Corp., Hamden, Conn., and for Celocrete units (regular Vinsol Resin cement) at the Cleveland Builders Supply Co. plant, Cleveland, Ohio. Purpose of the tests was to determine whether curing at high temperature would have any detrimental effect on concrete units; the effects on shrinkage; the economics; and the effect on durability.

One surprising observation was that there was no increase in compressive strength, even at two days, from curing at 200 deg. F. No injurious effects were observed and the effect was beneficial from the standpoint of shrinkage; units were less susceptible to cracking; and freezing and thawing test results were excellent. After 85 cycles of freezing and thawing of Celocrete units, the loss was less than 2 percent, with comparable results in tests of cinder units. No damage to units was observed at 200 deg. F. curing temperature even if the units were dried immediately. These tests are preliminary to others to be run by the Portland Cement Association under laboratory control, considering different cements, aggregates and humidity conditions.

Discussion following the report concerned details on the test procedure and recommended practices. The value of having cubes in stockpiling, with adequate air circulation, was stressed, and the possible use of yard dryers through which units could be passed before shipment. In a discussion of the 16-hr. cycle for high temperature curing, it was brought out that units should be allowed a 1½-hr. setting period before introduction of steam into the kilns as a safeguard against development of surface cracks. Then a period of 2 to 3 hr. would be required to bring kiln temperature up to 200 deg. F., to be held for the remainder of the cycle. In the tests, a 15 p.s.i. pressure boiler was used, the kiln being of block and slab concrete construction.

Two of the high-powered merchandisers of the industry. On left is Fred M. Kettering, Graystone Concrete Products Co., Seattle, Wash., on right, Harry Wagner, Plasticrete Corp., Hamden, Conn.

Left to right: President Deane R. Lynde, Cinder Concrete Products, Inc., Denver, Colo.; first vice-president Edwin P. Weese, Carbon Concrete Brick Co., Youngstown, Ohio; and second vice-president Paul E. Bohm, Concrete Products Corp., South Bend, Ind.

Henry Buchholz, Illinois Brick Co., Franklin Park, Ill., secretary-treasurer of the association

HAROLD L. SPAIGHT, chairman of the Publications Committee, reported that six issues of the "Pictorial," publication of the N.C.M.A., had been published and that 25 percent of the membership was subscribing to the publication. He stressed the need for the membership furnishing the committee with appropriate job photographs. HENRY E. BUCHHOLZ, chairman of the Membership Committee, reported that 43 new members had joined the Association in 1945 and 15 additional up to March 9, 1946. Then followed reports by the chairmen of the several aggregates divisions which held separate meetings preceding the general sessions.

Pricing Problems

WILLIAM L. PRINGLE, Head, Masonry and Refractories Section, Building Materials and Construction Price Branch, Office of Price Administration, Washington, D. C., led off one of the sessions with a clarification of O.P.A. policies in reply to specific questions. A producer from the Western Pennsylvania area began the discussion with a question as to the price assigned to a producer in a county where a low ceiling price is in effect when selling his product in an adjoining county where a higher price is in effect. Mr. Pringle answered that the producer would have to sell at the price set for his own county. A possible explanation of this difference in ceilings might be a higher freight or labor rate in the adjoining county.

A question was raised as to whether a delivery price set in 1942 would remain the same today under O.P.A. regulations. The answer was that the delivery price would be the same today, but if delivery costs have risen to such an extent as to make delivery of the unit unprofitable the producer should obtain an O.P.A. price for his unit f.o.b. his factory. Unless the set ceiling stated so specifically, the producer cannot use the price set as a delivery price to apply as an f.o.b. price.

William L. Pringle of the O. P. A.

In answer to questions as to prices to govern for newcomers into the field, Mr. Pringle said that they would get the same price ceiling as that of the competitor already in the field, delivery price as well as f.o.b. price. Mr. Pringle advised producers to make certain of their price ceilings and that they adhere to them.

In his observations of increased labor costs, Mr. Pringle said that, although pressure will be brought to bear to increase wages as a result of the steel strike settlement, producers should not expect O.P.A. to give them information on price relief in advance of wage negotiations. "O.P.A. will not be a third party to a labor dispute," he said. The procedure that a producer should follow is, first, the negotiation of a wage contract and then a followup of any wage increase by application to the O.P.A.

Two members of the Board of Directors, Les Schwalbe, Economy Block Co., Wauwatosa, Wis., on left, and George W. Katterjohn, Katterjohn Concrete Products, Paducah, Ky.

Plant Design Session

EXECUTIVE SECRETARY E. W. DIENHART opened the session on plant design Wednesday morning with every chair filled and some standing on the side lines.

RICHARD CARPENTER, chief engineer, Anchor Concrete Products Co., Buffalo, N. Y., led off the discussion on aggregate handling with a description of the new three-machine plant which his company is now building. The plant also has a Flexicore floor and roof slab division. He sketched the new plant layout on the blackboard, pointing out the extensive conveyor belt system, about 250 ft., at a 16 to 18 deg. angle, with a capacity for handling 250 tons an hour. There are both track and truck hoppers located along side of each other. The belt conveyor is in two steps with the storage system in between. Storage silo has a capacity to hold one freight car. There are two outside stockpiles for cinders to neutralize iron pyrites. It is planned to use Barber-Greene loaders with trucks to take stockpiled cinders back to the truck hopper for elevation to storage bin by belt conveyor. Sand and gravel is dumped into the truck hopper from local sources while cinders are handled by track hopper. A bucket elevator handles bulk cement received by truck up into a 160-bbl. compartment bin for different types of cement. Minimum stockpiling period for cinders is to be three months. Weathering is to be supplemented by spraying cinders with water.

Harold L. Speight, Cedar Rapids, Iowa, chairman of the publicity committee

W. Chester Smith, manager of the Engineering Division, Cooksville Co., Ltd., Toronto, Ont., Canada, was elected to the Board of Directors

HARVEY BLACK of Domine Builders Supply Co., Rochester, N. Y., said his company will use truck and track hoppers, both feeding a common conveyor belt. A bucket elevator takes cinders from the conveyor belt to the level of the bins where it is moved by screw conveyor to a triple deck screen for separation into two sizes. Oversize coarse material is sent to a roll crusher from which it is returned in closed circuit and passed over the screen. Handling of cinders is a continuous process as the fines go into a surge hopper with a bin-level control so that when full the material is diverted to bins, 75 cu. yd. for fines and 25 cu. yd. for coarse. A magnetic pulley is used before the material is passed over the screen and another unit is installed to collect tramp iron after passing through the crusher.

H. FILIPPI of Illinois Brick Co., Chicago, told about the four-machine plant now under construction. Structural steel is now being erected. Mixers are located on a mezzanine floor as he is of the opinion that once material is in motion it should travel in a direct line. Weigh batchers will be movable, but he is against the practice and accepted it only as an alternative. He said that mechanization in both plant and yard is imperative to reduce costs. Mr. Filippi said that if screws were practicable for track unloading, they should be equally adaptable for distribution of materials on the mixer floor.

SAM PATURZO of Baltimore, Md., has used both mezzanine and floor mixer locations in different parts of the plant. In the newest plant, built in 1942, ground floor mixing is used as it can be better controlled. Mr. Paturzo uses pre-treated cinders so that no outside stockpiling problem is involved. With the aid of a blackboard, he sketched the unique material handling and mixing arrangement. Cinders are dumped from a slight ramp into a hopper with sides having about a 48 deg. slope. The hopper feeds to a short belt conveyor, which is controlled by a mercury-float switch by push button, and dumps to a mixer slightly below floor level. A skip carries concrete from the mixer to the hopper supplying the block machine on floor level. Two vibrapacs are operated with bag storage for cement between the two machines. Dust up to ⅜-in. cinders are used; also bank run sand and gravel, and slag.

BENJ. WILK of Standard Building Products Co., Detroit, Mich., told about his experience with continuous mixers. He uses a 9-ft. continuous screw mixer, and claimed that it did a better job as it turned over material faster in smaller quantities. Cost of power is less as a 5-hp. motor is used as compared with 25-hp. The big question, he said, is the matter of getting accurate proportioning. Weighing is better than volumetric measurement. He pointed out that 25 percent of the production in Detroit is using continuous mixing. Mr. Wilk suggested

that manufacturers should devise some method of weighing small quantities continuously.

R. S. BEALE of Detroit expressed the opinion that the batch mixer has an advantage over the continuous mixer in the matter of weight control in proportioning. The question was raised whether it would be practicable to use continuous mixing with light weight aggregates. Considerable discussion arose over the possibility of using an asphalt type mixer for concrete as the mixing could then be speeded up.

HARVEY BLACK of Rochester told about his new plant set-up for curing. Curing rooms have walls 24 in. thick up to grade and from then on up, two 8-in. blocks with an 8-in. air space, are used. Reinforcing consists of ½-in. rod on 16-in. centers. Rods project up above wall and are tied into the roof slab which is of reinforced sand and gravel concrete, 8-in. thick. Above this slab is 18 in. of loose cinders. Over the cinders is a 2-in. concrete slab with a 5-ply roofing cover. Dampers 2-ft. in diameter at each end of the roof open into a duct running the length of the curing room. A suction fan with 10-hp. motor draws out steam through a sliding gate damper. The rooms are 7 ft. 9 in. high and 18 ft. wide, holding 28 racks. Hyster lift trucks will be used to handle block to and from the curing rooms. The 8- x 20-ft. door is of 1-in. matched lumber covered with 40-lb. coated tin sheets on the side exposed to the curing room. A clamp devised by the architect holds door securely, and a counterbalance makes handling easy. A felt sealing cushion is used on the inside of the door. The walls on the inside of curing room will be coated with a vapor barrier. A temperature of 200 deg. is contemplated, using a 175-hp. boiler. There are seven curing rooms, each holding 2000 block.

PHILIP PAOLELLA of Plasticrete Corp., Hamden, Conn., described his new plant curing room design. The outer wall will be a 12-in. cinder concrete block backed with 4 in. of loose concrete and with a 2-in. foam glass inner facing for insulation. The wall and roof slab will be reinforced with ⅜-in. and ½-in. rod. There will be a 6-in. concrete curbing along each wall to protect the foam glass panels. An asphalt mastic will be used as a vapor barrier. Door joints will be sealed with gaskets.

As the morning session did not complete all subjects on the program, the discussion on covered storage was continued in the afternoon. Cloyd Fellabaum said that he favored covered storage because labor is more satisfied, and work can be done under cover without loss of time. Truck drivers also like covered storage as loading can be done under cover. The plant can operate equally efficient in both summer and winter. Delivery of dry block in winter is particularly desirable. Breakage and tipping from frost is eliminated. Mr. Fellabaum pointed out that practically all brick plants have covered storage. Concrete pavements, he said, save on haulage trucks and lift trucks. His plant has storage for 200,000 concrete units under cover. Storage sheds are 35 ft. long and 12 ft. high.

HENRY BUCHOLTZ of Illinois Brick Co. described his depressed loading pits which are 70 ft. long and 40 in. high. This arrangement cuts down lifting height for workmen and speeds up loading.

Operating Practices

RAY BERGER of Detroit said that his company had tried to assign particular types of work to individuals as for example, handling of sand and gravel. When cement is unloaded in the morning, yard labor and some truck drivers are used, taking about one-half hour. He has three lift truck drivers. One man greases block machines. In the yard five laborers load racks and unload trucks to cut down standing time. Two continuous mixers are used with one man for each machine. Five men handle from 5000 to 6000 sand and gravel block per day.

L. M. UPCHURCH of Hoke Concrete Products Co., said that when he designed his plant he decided to use double-shift operation. However, production in the night shift was not as satisfactory as for the day shift. He pointed to the need for better working conditions. Lighting is very important. Stockpile areas should be well-lighted. Curing rooms, boiler room, etc., also should be adequately lighted. Heating should be sufficiently ample for comfort. A portion of the aggregate stockpile also should be under cover. He said that absenteeism is more prevalent with poor working conditions. Crushing equipment should be twice the day shift requirements as this work should not be done at night. Mr. Upchurch said that the bottleneck with two-shift operation is curing capacity. He prefers smaller curing rooms, using eight with 1000 standard block capacity each.

JOHN STRANDBERG has had success with two-shift operation. Mr. Strandberg stressed the importance of building and maintaining the morale of the workers through personal contact with them on the part of management. He actually has spent considerable time on the night shift with the men, encouraging them and stressing the importance of each of them individually in the program their company has undertaken. He believes that multiple shift operation is the answer to the squeeze between high production costs and "hold the line" prices as established by O.P.A.

L. M. Upchurch, Hoke Concrete Works, Raeford, N. C.

Edward O. Evans, Simplex Building Materials Co., Monrovia, Calif.

W. Stirling of Keir and Cawder, Ltd., Glasgow, Scotland, was an attentive guest at the convention. Mr. Stirling is a large producer of crushed stone, agstone, sand and gravel, clay brick, and a building supply dealer contemplating going into the concrete masonry business in Scotland

J. T. Hestle, Concrete Manufacturing and Supply Co., Nashville, Tenn., a civil engineer and comparative newcomer to the industry, has a plant with 12,000 unit daily capacity in two shifts

He has found that production costs for night operation do not suffer. by comparison with those on the day shift and that night operation actually is more profitable because of overhead elimination and removal of some hindrances to economical operation. Maintenance costs are not greater. The shift is from 5:30 p.m. and runs for 8½ hr. including a ½ hr. cleanup allowance.

JOSEPH NAGY, Toledo, Ohio, in his discussion of the use of lift trucks, told of his successful experience in cubing concrete units. The cubes vary from 165 4-in. lightweight units to 40 of the 12-in. heavy aggregate units. Herbert Geist, Cleveland, Ohio, who said his plant has been on a 24-hr. schedule for years, said that the lift truck was the nervous system of his plant.

In the discussion that followed, Mr. Nagy pointed out that pallets or the placing of cored units underneath were means for handling solid units. In reply to a question, he said that cubes may be handled by fork lift trucks the day after manufacture and that no damage was experienced in handling units by that method.

W. A. NEFF, Danville, Ill., described a power-operated yarding device in service in his plant, which has materially reduced yard handling costs. The machine has a 16-ft. boom, is rigidly mounted and is re-located in the yard by lift truck. It has a reach of 11 ft. in each direction, can handle 1800 units at one location and has a stacking capacity of 600 units per hr.

Curing practices and absorption of concrete masonry units were discussed by C. L. Stewart of the Portland Cement Association, who also described a method for quick determination of moisture content, for comparison with the A.S.T.M. requirement that moisture content not exceed 40 percent of total absorption. Mr. Stewart presented data correlating wall shrinkage with various changes in contained moisture. A concrete masonry wall will shrink 1¼ in. in 100 ft. of length when moisture content is reduced from saturation to a bone dry condition, he said, which amounts to taking out ½ of one percent of the shrinkage when moisture content is reduced to the specified maximum of 40 percent of total absorption. A further reduction in moisture, from 40 percent to 20 percent, would bring a lineal change of ⅝ in.

Mr. Stewart also discussed the effectiveness of various methods of stockpiling, as tested, on the degree of absorption carried in concrete units; cores vertical, cores vertical but placed on pier block for flue action, and cores horizontal with horizontal air flow. The latter two methods were equally effective in reducing absorbed moisture satisfactorily, and, by forcing heated air through the cores, it was possible to reduce contained moisture to 2 2percent in 8 hr.

GLENN C. BARNES, Syracuse, N. Y., described high temperature curing principles to be introduced at his plant which will employ a drying phase after a wet phase. The theory to be applied is to reach a saturation point in the kilns and circulate highly saturated heated air at a fast rate in such a way that a film of moisture is in contact with the cold block, approaching total submersion in effect. Curing temperature is 185 deg. F. with quick exhaustion to below 100 deg. F. to be followed by heating in the kiln to about 200 deg. F., with reduction to 25 percent.

John A. Ruhling

Merchandising

JOHN A. RUHLING, manager of the Housing and Cement Products Bureau, Portland Cement Association, featured speaker at the general luncheon on March 13, presented the highlights of the Portland Cement Association's program for building larger markets for concrete masonry. During the next five years he believes there will be built a greater variety and larger volume of useful projects than ever before in a like period. The spotlight is being focussed on housing, he emphasized, in stating that that is the field on which the industry must concentrate first—particularly in providing low-cost shelter.

He stressed the competitive drive that will come for the construction dollar in emphasizing that the industry must put on an aggressive, alert and sustained drive for maximum volume if it expects to approach its potential. This, he said, calls for research, development of new and improved uses, adequate advertising, service to users, educational effort and a strong program of intelligent, aggressive promotion and creative selling. The real test will come with conversion back to a buyer's market. More than ever the industry slogan must be, as he expressed it, "A quality product, efficiently manufactured and aggressively sold."

A serious handicap in his opinion, is the fact that, during the war, manufacturers had been forced, against their will in some cases, to ship inadequately cured block and excessive cracking that resulted has raised questions in the minds of certain officials formerly friendly to concrete masonry. This must be overcome.

Mr. Ruhling outlined the P.C.A. test program to determine the effect of temperature and other variables in curing and drying on the properties of concrete masonry units and discussed briefly the portable drying oven developed for moisture tests at the plant. He recommended that all manufacturers take steps to secure this oven and conduct tests as an aid in merchandising quality units.

He also mentioned the research program on cinder staining which was conducted in order to detect tendencies of certain cinders to cause staining, and which has led to development of inexpensive treatments to make unsatisfactory cinders entirely satisfactory. These are the moisture treatment and lime process discussed elsewhere in this report. It was also recommended that manufacturers equip themselves with this testing apparatus in order to test their cinders, in the development of proof that their units are free from staining.

For years ahead, the biggest job confronting the industry will be the development of markets, he said, in

reminding that the day will come when the customer will be welcomed even if he only wants a few units. The P.C.A. advertising program in national consumers magazines was mentioned as one big effort being made to promote the use of concrete masonry units in the residential building field. As a result of this advertising, the P.C.A. receives 600 to 800 inquiries daily for copies of housing literature. In support of this program, he urged manufacturers to advertise, to offer service, to use circulars and to plan demonstration homes. Demonstration homes, he said, have outstanding promotion value. He offered suggestions as to how they should be built.

He stressed the importance of having salesmen regularly call on builders, architects, realtors, prospective home buyers and key farmers, whether or not they have an immediate job under consideration. A market building budget should be provided every year, he said, to cover direct selling, advertising, etc.

He mentioned other activities of the Portland Cement Association, of direct benefit to the industry, including work with influencing groups in gaining acceptance for concrete masonry and work being done by the district field offices on building code revisions, preparation of specifications and in cooperation with architects, builders and prospective home owners on the technical aspects of concrete masonry.

Mr. Ruhling had some advice and a word of caution on the matter of increasing plant capacity. He suggested that the following questions be honestly answered first:

1. During the next few years what is the maximum number of block per year that can be sold in my market?
2. How many can I sell?
3. Is my present plant operating at full production?
4. Have I provided a market building and sales program which will dispose of the full capacity of my present equipment.

In conclusion, he pointed out that increasing capacity rarely if ever increases sales and that the safest course to follow is to go "all out" for a concentrated and more effective market building program.

Selling the Farm Market

The final general session was entirely on the subject of merchandising. W. G. KAISER, manager of the Farm Bureau, Portland Cement Association, outlined a basic program for insuring future business in the farm market. As a special feature, Mr. Kaiser presented an excellent sound movie film in color, prepared by his department, to portray recommended practice in building concrete masonry walls.

Mr. Kaiser emphasized the size and market potentialities of farm construction which, in the past few years, has totaled more than it did for 100 years before. He stated that farmers make a habit of building what they see on their neighbors' farms, so it is of extreme importance that structures that may serve as good examples be built on farms for their sales stimulating value. Mr. Kaiser also emphasized that now is the time to look ahead and establish concrete masonry for the years ahead when business will not come so easy.

A lot of pre-education is required, he said, in commenting on the Association program of educational promotion. Visual education is emphasized and the use of movie film is one of the outstanding means for showing before farmers' groups. Films such as the one shown are being made available for farmer groups, to agricultural teachers, for special meetings of contractors and architects and other important gatherings, through the district offices of the P.C.A.

Following Mr. Kaiser's presentation, leaders in merchandising from within the industry outlined their methods to stimulate sales. OTTO BUEHNER, Salt Lake City, Utah, emphasized the need for aggressive sales projects such as those sponsored by the P.C.A. Concrete masonry must be advertised to picture the industry as a manufacturer of a high class building material, not merely as the producer of a product available to alleviate a temporary shortage of other building materials, he added.

FRED KETTENRING, Graystone Concrete Products Co., Seattle, Wash., outlined some of the merchandising methods employed on the West Coast. His concern has sold 4,000,000 standard units or, roughly, eight per capita of population and employs three sales

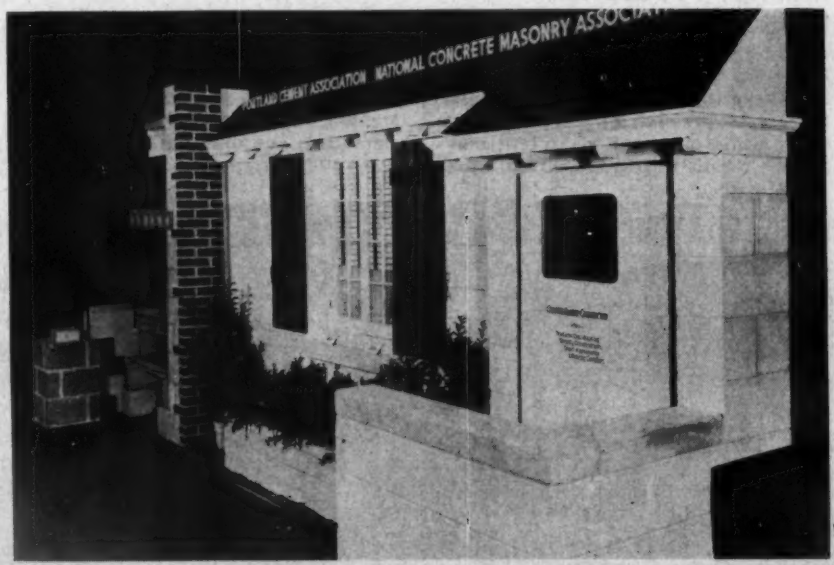
(Continued on page 159)

Glenn C. Barnes, Barnes and Cone, Syracuse, N. Y., a live-wire producer

Home Show Exhibit

CONCRETE MASONRY and floor construction received a great deal of interested attention at the recent National Association of Home Builders Exposition at the Stevens Hotel, Chicago, Ill. The joint exhibit of the Portland Cement Association and the National Concrete Masonry Association featured concrete masonry wall construction with the horizontal joints accentuated and with the vertical joints cut flush. The wall was painted with portland cement paint.

Three types of concrete floor construction were shown; the precast concrete joist, Flexicore and concrete block joist design. The exhibit also showed the installation of electrical outlet and heating ducts and details of concrete masonry chimney construction.



Joint exhibit of the Portland Cement Association and the National Concrete Masonry Association at the National Association of Home Builders Exposition

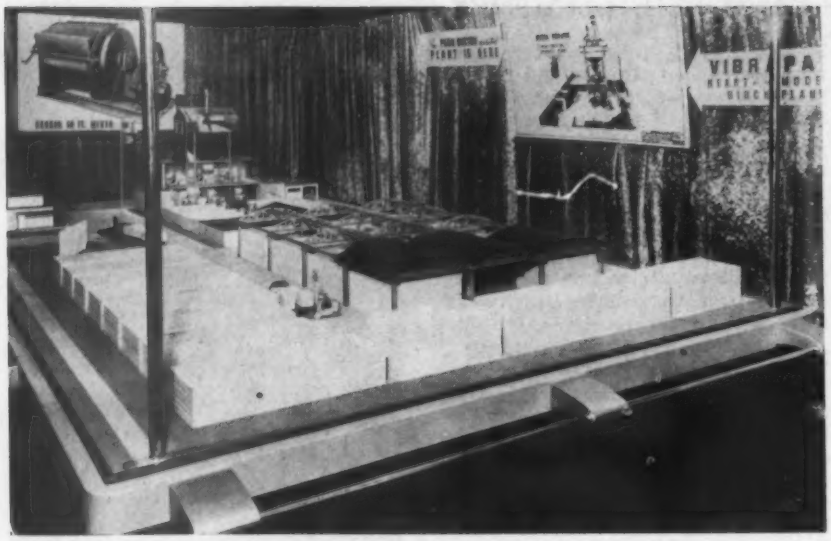


Exhibit model of concrete products plant

Exhibits

FOR the first time since the beginning of the World War, the National Concrete Masonry Association had an exhibit in connection with its annual meeting. As compared with the big displays of other years, there were only a few exhibitors and practically no machinery. Drawings, photographs, and models largely took the place of machinery. Manufacturers having exhibits included the following: The Automatic Transportation Co.; Barrett-Cravens Co.; Besser Manufacturing Co.; C. S. Johnson Co.; Kent Machine Co.; Petoskey Portland Cement Co.; Albert E. Schaefer Co.; and Stearns Manufacturing Co. Plans are being laid for a much bigger exhibit next year when machinery will be available and transportation difficulties will be less acute.

Medium Production Block Machine

ROY DARDEN INDUSTRIES, INC., Atlanta, Ga., utilizes vibration and pressure-head compaction in the manufacture of pressed top concrete masonry units on the Rockercrete machine, recently introduced to the industry. The machine utilizes air cylinder motivation, and is designed principally for medium capacity plants, with a production range of 1200 to 2000 standard 8-in. units per day. A single 8- x 8- x 16-in. unit, including modular sizes, is manufactured per cycle and the machine is available either for 3-core or 2-core (modular) masonry units. The company offers engineering service and a complete line of equipment and accessories, a "packaged" service, to concrete masonry plants.

Vibration and pressure-head compaction used with this block machine. The machine is actuated by air cylinders

New Block Plant Owner

WRIGHT COUNTY CONCRETE CO., Buffalo, Minn., has been purchased by Willard Mattson from Gordon Mills. Plans are being laid to increase production by the purchase of new equipment.

Move Office

NATIONAL CONCRETE MASONRY ASSOCIATION is now located in its new office at room 714, First National Bank Building, 38 S. Dearborn street, Chicago, Ill. Telephone numbers are Randolph 0693 and 0694.

Enlarge Block Plant

CARL GRANDE, who has operated a small concrete block plant in Titusville, Penn., on West Central avenue, is starting the construction of a much larger plant. The new plant will have a capacity of 4000 block per day.

Large Capacity Masonry Loader

DEMPSTER BROTHERS, INC., Knoxville, Tenn., has developed a carrier for concrete block, for quick loading of units from stockpile to trucks, in large quantity, for delivery. The carrier, illustrated herewith, will be available in three capacities, to load 400, 500 or 700 lightweight units, respectively on to trucks in single large cubes. Top capacity is 10 tons, or 500 standard 8-in. units of heavy aggregates.

The carrier employs forks for insertion, in horizontal cores, to raising the load, as shown, by hydraulic mechanism on to the truck. The machine can raise and load a cube of units from ground level or a partial pile taken from a higher level, and has the advantage that units may be unloaded at the job without leaving pallets and stockpiled there at workable height, in a single operation. Units may be loaded and handled to the job on standard trucks equipped with the hydraulic loading mechanism or in customers' trucks.

Left: Block carrier in proper position for picking up and driver ready to put aluminum tine carrying beam into position, tines acting as beams to carry load. Center: Vertical hoist elevates block carrier. Right: Block carrier in position for transporting

Stephen Colmar, left, and ex-serviceman Walter Brooks, of Ramloc Stone Co., Albany, N. Y.

Merchandising

(Continued from page 157)

engineers. Catalogue sheets, showing stock and other informative material are made available to architects and an annual budget provides for an advertising consultant who lays out an annual, continuous advertising program.

HARRY WAGNER, Plasticrete Corp., Hamden, Conn., told how his concern merchandises the name "Plasticrete," the sales program being formulated on the idea that the company does not sell block but only "Plasticrete Block." That fact is aggressively merchandised in all the selling, advertising and in every other kind of promotion employed. It is obvious that the name selected is modern and in keeping with the times. The company regularly sends information to potential customers on its mailing list, supplies estimating sheets to customers and employs many methods, including painting the name of the unit on trucks, to keep that word "Plasticrete" in the presence of potential builders.

HAROLD SPAIGHT, Cedar Rapids, Iowa, discussed how business may be built through sales through dealers. His experience has been that qualified dealers make selling easier and have the facilities for complete sales

(Continued on page 160)

H. E. Shaw, Atlanta Aggregates Co., Inc., Atlanta, Ga., reading "guess what?" in ROCK PRODUCTS' booth

C. S. Dickson, Standard Sand and Gravel Co., Wheeling, W. Va., left, and J. R. Belot, Belot Concrete Block Co., Tiltonsville, Ohio

(Continued from page 159)

coverage. Promotional material is supplied the dealers.

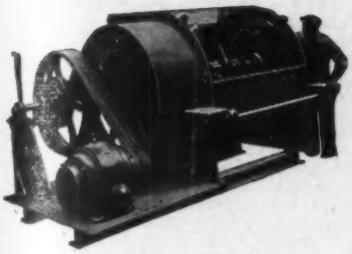
HAROLD GEIST, Cleveland, Ohio, employs the trade-mark idea and told how "Geistone" is merchandised. All block are labeled with that name as a means of identification with a high quality product. The company uses cardboard signs on the trucks and jobsite, blotters, pencils, price lists and promotional literature as part of its merchandising campaign.

The convention concluded with a brief discussion of recommended construction practices. PAUL M. WOODWORTH reviewed A.S.T.M. specifications, five of which apply to the industry. He mentioned that solid, load-bearing units have largely been ignored by the industry though they have an important, possible role for thickening solid brick walls.

ERNEST SWANSON, Kansas City, Mo., very briefly discussed the use of reinforcement in walls and AUSTIN CRABBS, Davenport, Iowa, commented on the shortcomings of the 40 percent contained moisture provision specified. He believes it is a requirement that just partly accomplishes its purpose. He is preparing to resume manufacture of 2-core units in preference to 3-core block because he desires a thicker shell in the center of the unit.

Lieut. P. M. Parks, Besser Manufacturing Co., Alpena, Mich., and D. Grillasca, Concrete Industries, Inc., San Juan, Puerto Rico, general contractor and producer of crushed stone and large concrete block manufacturer

Multiplex will assure you best service under present conditions



Multiplex Multi-Mixer

Reverse, screw-type action assures thorough, uniform mixing of every batch. The perfect machine for assembly-line type block making.

Today's production of Multiplex machinery is the greatest in history. Many additions to plants by old Multiplex customers plus hundreds of new Multiplex-equipped plants is taxing our facilities.

Orders are filled in order of acceptance which means that you yourself decide when your new Multiplex machinery will be delivered by the date of your order.

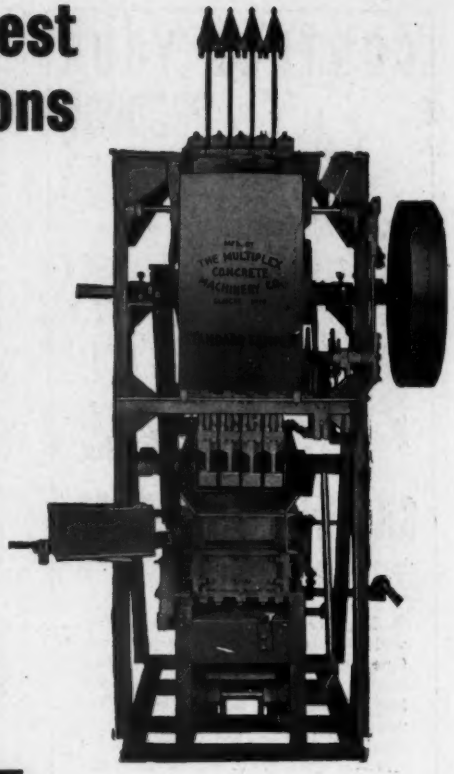
The same high quality which has given every Multiplex user years of trouble-free service in the production of high quality, uniform concrete products continues to be built into every piece of our machinery.

MULTIPLEX STANDARD TAMPER

This reliable, economical machine produces three to four 8 x 8 x 16 in. blocks of uniform, high quality per minute, day after day with minimum maintenance. The beautiful block produced will build your lasting reputation.

FLUE-BLOCK . . . *A Profitable Sideline*

The Multiplex Flue Block Machine makes ventilated, solid or lightweight units, including all attachments for ventilator and stove pipe openings.



THE MULTIPLEX COMBINATION
- Beauty in Block
- Low Cost Production
- Simple Operation

43 Years of Service

MULTIPLEX CONCRETE MACHINERY
ELMORE, OHIO

WRITE FOR CATALOG

For Lightweight Concrete

WAYLITE AGGREGATE

LIGHT • STRONG • DURABLE
FIREPROOF • LOW ABSORPTION
INSULATING • SOUND ABSORBING
NAILABLE • LOW COST

THE WAYLITE COMPANY
105 West Madison Street, Chicago 2, Illinois

UNIVERSAL CONCRETE PIPE

Widely Available

26 Universal plants in strategic locations in the nation afford ready availability of pipe in stock sizes to 108"—larger sizes quickly provided on special order. Speed is the order of the day in construction—and Universal Pipe is one material ready for use TODAY!

UNIVERSAL Trade Mark
CONCRETE PIPE CO.
Columbus 15, Ohio

New Incorporations

Vashon Sand & Gravel Co., Vashon, Wash., has been organized to engage generally in the sand and gravel business, with a capital of $1500. Incorporators are J. G. Furbush, Lucy Furbush and A. M. Huston, all of Vashon.

Central Block Co., Stratford, Wis., has been incorporated to deal in concrete building and construction materials, with a capital stock of 150 shares at $100 each. Incorporators are Charles A. Kohlbeck, Jerome J. Kaiser, Theo. W. Hoffman, all of Stratford.

Ottuma Concrete Block Co., Ottumwa, Iowa, has filed articles of incorporation to engage in the manufacture, buying, selling and dealing generally in, at retail or wholesale, concrete products, building materials and completed structures. Authorized capital stock is $15,000 divided into shares of the par value of $100 each, of which $6000 or 60 shares has already been subscribed and paid in. Board of directors and officers are Noble D. Carroll, president; W. Royce Carroll, vice-president; Richard H. Carroll, secretary; and W. K. Carroll, treasurer.

Midwest Quarries Co., Inc., Bloomington, Ind., has been organized to quarry and deal in building stone and operate stone quarries, mills, etc., with a capital stock of 150 shares, no par value. Incorporators are George Reed, William H. Johnson and Charles H. Kasch.

Standard Concrete Products Co, Burlington, N. C., has been organized to deal in concrete products. Authorized capital stock $100,000, subscribed stock $12,000 by W. R. Teague, G. W. Garrison, P. C. Nucholls, Irene Nuckolls, all of Burlington.

Statesville Ready-Mix Concrete Co., Statesville, N. C., has been incorporated to operate a general engineering and construction business. Authorized capital stock $100,000; subscribed stock $1000 by Harry Tsumas, Mary B. Tsumas, W. L. Kimmons and Dorothy C. Kimmons, all of Statesville.

North American Graphite Co., Wilmington, Del., has been incorporated for mining, building, etc. Capital stock 2000 shares, no par value. Principal office, U. S. Corporation Co.

Eastern Concrete Products Co., Wakefield, Mass., has been organized with a capital of 1000 shares of common stock. Victor Albert is president; Max Mandelstam, treasurer; and Mollie Dansky, clerk.

Woodleaf Stone Co., Inc., Woodleaf, N. C., has received incorporation papers to deal with mineral products. Authorized capital stock $200,000; subscribed stock $25,000 by M. N. Hedrick of High Point, and L. M. Seawell and T. L. Hedrick, both of Winston-Salem.

Standard Slag & Stone Co., Ashland, Ky., has been granted a charter, with a capital of $5000. Incorporators are R. W. Grimsley, W. E. Covington, and J. W. McKenzie.

Wenatchee Concrete Products, Inc., E. Wenatchee, Wash., has been incorporated with a capital of $21,000. Filed by S. R. Sumner, Wenatchee, Inc. Incorporators are G. E. Batterton, George, Jr., and H. B. Jackson, all of E. Wenatchee.

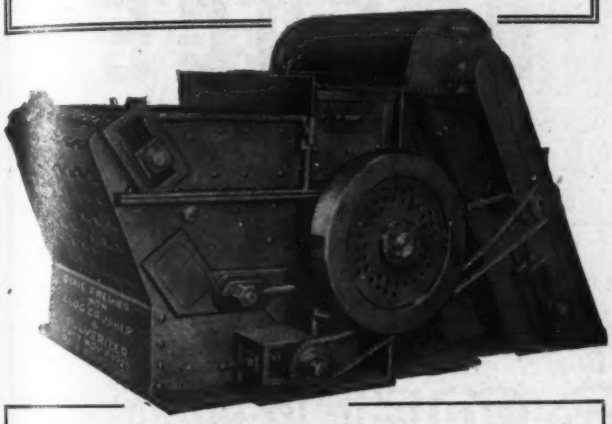
Circle City Concrete Co., Indianapolis, Ind., has been incorporated for general concrete construction. Incorporators are Glenn C. Blumer and J. L. Showalter.

National Concrete Corp., Wilmington, Del., has been organized to deal in concrete. Authorized capital 100,000. Principal office, Corporation Trust Co.

Canton Concrete Products, Inc., Canton, Ohio, has been organized to make concrete building block, with a capital of 100 shares of no par stock. Incorporators are John L. Kronsis, Russell E. Wilson and Harry O. Collins.

WHEN PRODUCTION CANNOT LAG

DIXIE GETS THE CALL!



DIXIE
Non-Clog
HAMMERMILLS

NOTE THESE TYPICAL TOUGH JOBS LICKED BY DIXIES

1. Replaced four crushers for high moisture content bauxite . . . cut power in half . . . reduced drying costs . . . increased production.
2. Efficiently crushing clay balls to reclaim phosphate in Florida phosphate plants.
3. Crushing phosphate muck in T.V.A. Tennessee plant.

HERE'S WHY . . .

The Dixie Non-Clog Hammermill is the only crusher with a moving breaker plate. Provides positive mechanical feed. No manual pushing of material needed. Even the most plastic, wet, clayey material will not slow production or clog hammers. This feature alone has saved the cost of 10 men in one company!

And because the Dixie moving breaker plate can be moved forward or backward from the hammer points, quality and size of production can be controlled. This feature provides additional assurance against clogging. These are but two of Dixie's outstanding features. Send coupon below for free booklet, "More Efficient Crushing of Raw Materials" which gives complete facts.

DIXIE MACHINERY MFG. CO.

4202 Goodfellow Blvd., St. Louis, Mo.

GET THE FACTS!

Dixie Machinery Mfg. Co.,
4202 Goodfellow Blvd., St. Louis, Mo.

Please send free booklet on Dixie Non-Clog Hammermills. We want to crush .....

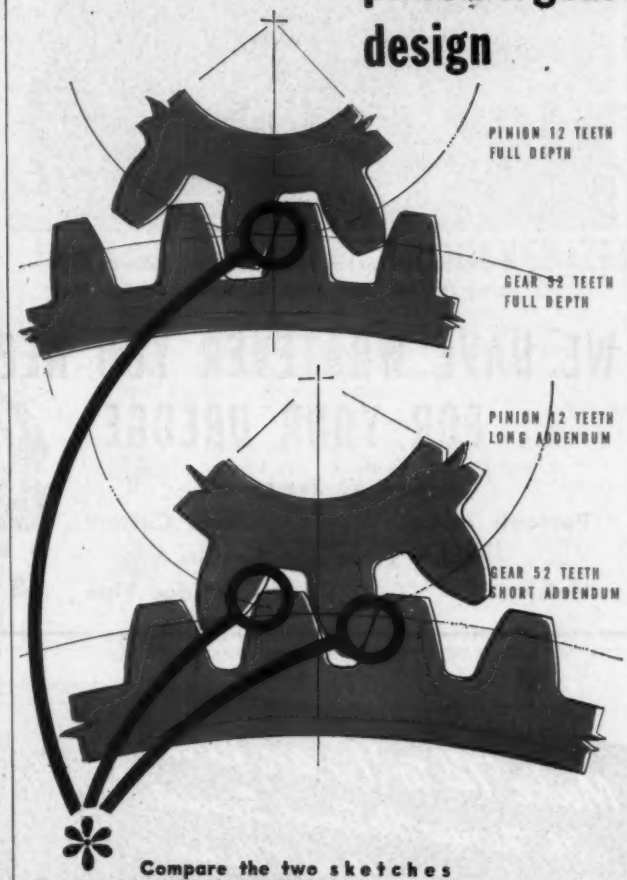
Name .....

Company .....

Address .....

City ..... State.....

for gear efficiency use Stroh 20 deg. pinion & gear design



Compare the two sketches above and see for yourself the advantages of 20 deg. gear design over the standard 15 deg. design. Notice involute teeth with short addendum teeth on gear and long addendum on pinion come in contact earlier and stay in contact longer. Notice also that teeth are stronger because of wider base.

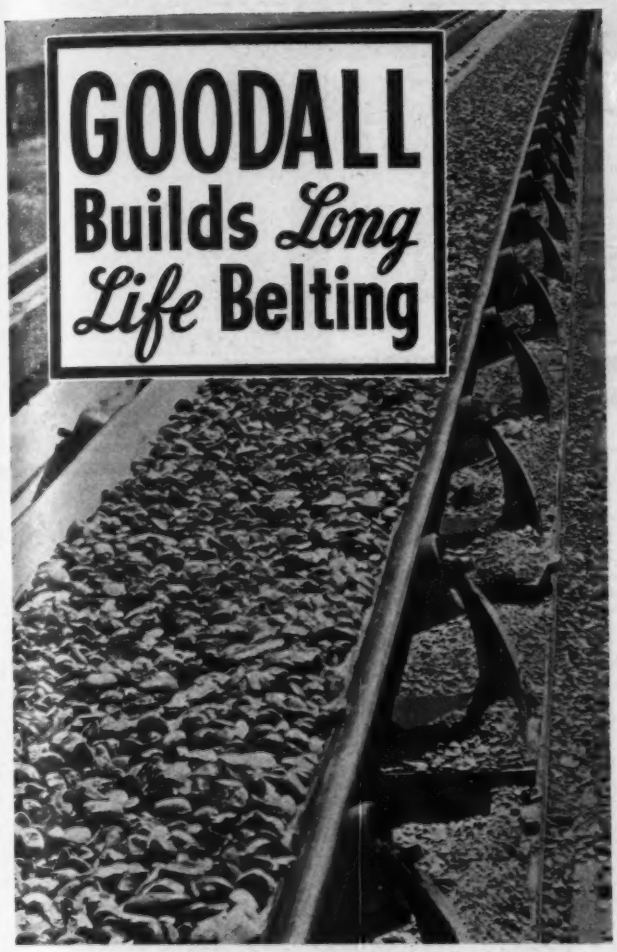
Check these advantages and see how they apply to your plant. (1) Stronger teeth. (2) More tooth surface to resist wear. (3) Smoother running with less tooth chatter. (4) Less danger of tooth breakage. (5) Less pounding on bearings. (6) Less power needed to operate drive. (7) Longer wearing life.

Gears available in either standard design or 20 deg. design cast by the Stroh wear-resistant process with hard, wear-resistant surface and softer, cushioning core. Write for gear catalogue telling the whole gear story.

We also specialize in Trunnion Rollers, Sheaves, Kiln Tires, Crusher Rolls and Jaw Plates.

Stroh Process Steel Co.

1428 HIGH STREET, N. S.
PITTSBURGH 12, PENNA.



"TRIPLE-S" CONVEYOR BELTING. Made to specifications that assure lasting service on the longest, heaviest hauls. Used for carrying ores, crushed limestone up to 8", rough slag, hot materials, etc.

"GOODALL" CONVEYOR BELTING. Similar in quality to "Triple-S", but built to handle lighter materials—crushed stone, gravel, sand, shells, ashes, etc.

"76" BRAND ELEVATOR BELTING. For hard service and rough wear on wet or dry crushed stone, crushed slag, trap rock, etc. Rugged construction well adapted to attachment of steel buckets.

"POWER KING" TRANSMISSION BELTING. Raw edge belting of highest quality, for rock crushers, cement plants and other service demanding superior strength and stamina. Silver hard duck construction.

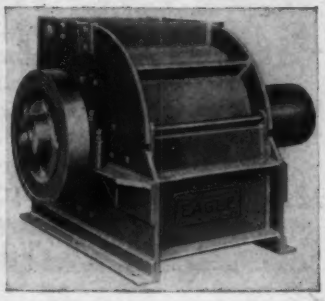
Contact Our Nearest Branch or Main Office for Details of These and Other Goodall Products . . . "Engineered to Your Job."

GOODALL
RUBBER COMPANY INCORPORATED

THE GOODALL-WHITEHEAD COMPANIES
Philadelphia • Trenton • New York • Chicago
Pittsburgh • Boston • Los Angeles • San Francisco • Seattle • Salt Lake City • Houston

Factory—Trenton, N. J. Established 1870

A Strong Compact Unit



with a Wide Range of Reduction

EAGLE

IMPACT BREAKER & PULVERIZER

The Eagle is a modern streamlined unit, operating with heavy, reversible, free-swinging hammers, having four adjustments for long wear—the machine selected by discriminating producers.

- One-piece welded steel frame reduces weight to a minimum, yet provides increased strength.
- Easily adjustable, heavy manganese steel breaker plate, permits production of different sized material as required.
- Heavy, reversible manganese steel hammers and heavy special alloy steel shaft.
- SKF double-roller, self-aligning bearings, completely protected from dust by labyrinth seals.

LOADS 2 to 3 TONS PER MINUTE

Eagle Truck-Mounted Loaders operate at variable speeds, loading 2 to 3 tons per minute, with wide loading ranges. All operations are easily performed by one man.

Write for Detailed Literature

EAGLE
CRUSHER CO., INC.

Galion, Ohio

The Originators of One-Piece Electrically Welded Crusher Frames

EAGLE
JAW CRUSHERS
IMPACT BREAKERS
PULVERIZERS
CONVEYORS
LOADERS

CLASSIFIED ADVERTISEMENTS

Single insertion rate $8 per column inch. Larger insertions accepted at lower rates; request classified rate card. Terms: Cash with order except for contract advertisers who are billed monthly at contract rates. *POSITIONS WANTED and POSITIONS VACANT (not displayed ads) $1 a column inch per insertion; cash with order.*

Construction moves at a faster tempo in the Air Age. BUY or RENT speedy, dependable Equipment from E. C. A.

STIFF LEG DERRICKS

1—75 ton Hoist & Derrick Co. Stiff Leg Derrick, 40′ mast, 130′ boom, with special double drum, 125 H.P. electric Hoist and attached swinger, with control equipment 440/60/3.
1—62½ ton Insley Stiff Leg Derrick, 54′ mast, 70′ boom.
1—40 ton American Terry Stiff Leg Derrick, 60′ mast, 120′ boom.
DERRICKS IN EXCELLENT CONDITION LIKE NEW

AIR COMPRESSORS

Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. 1,000 cu. ft.

CRUSHERS

1—Acme Style D, 29½ jaw crusher, with screen, elevator and gas engine, 12 to 18 tons per hr.
1—Good Roads crushing plant, crusher, 10x20″.
1—No. 2 Climax jaw crusher, size 9x16″.
1—Buchanan jaw crusher, size 10x16″.
1—Acme jaw crusher, Ser. No. 1873, size 12x30″.
1—No. 3 Champion jaw crusher, size 7½x13″.
1—United Iron Works, "Blake-type" jaw crusher, size 9½x24″.
1—Sawyer Massey jaw crusher, size 9x18″.

DERRICKS

4—Steel guy derricks. 1—20 ton Insley 115′ mast, 100′ boom. 2—20 ton American steel guy derricks. 1—110′ mast, 110′ boom; 1—100′ mast, 90′ boom. 1—15 ton American steel derricks, 85′ mast, 75′ boom. 1—8 ton Terry Guy Derrick, 70′ mast, 60′ boom.
2—Stiff leg derricks.
1—15 ton Clyde, 30′ mast, 45′ boom. 1—11 ton Fort Pitt, 28′ mast, 70′ boom. Also a number of wood stiff leg derricks, 1 to 5 ton cap.

HOISTS (Electric, Gas, Steam)

85—Electric, ranging from 30 H.P. up to 125 H.P. consisting of triple-drum, double-drum and single drum, with AC or DC motors, some with attached swingers. Following makes: American, Clyde, Lambert, Lidgerwood and National.
Gas hoists ranging from 8 to 120 H.P., single, double and triple-drum; all standard makes (38 in stock).
Steam, ranging from 8 H.P. to 60 H.P., single, double and triple-drum; all standard makes.

PNEUMATIC TOOLS

Column Drifters and Tripods

4—Model 17 Denver rock drills.
3—Sullivan high-speed drills, Model FG-3.
5—Ingersoll-Rand type X71 drifters.
4—Gardner Denver drills with drifter mountings.

JACKHAMMERS

8—Jackhammers, consisting of Hardsoco, Worthington and Cleveland. 45 lb. and 85 lb. class.
4—Ingersoll-Rand Model BCR-430 jackhammers, 47½ lbs.
1—No. 3 Hardsoco 50 lb.

WAGON DRILLS

2—Gardner Denver derrick drills with Model 21 Gardner Denver drill; will drill 30 ft.
1—Ingersoll-Rand drill, size D, with utility air hoist and Ingersoll-Rand X71 drill.
1—Ingersoll-Rand Model FM-2 drill, with Ingersoll-Rand air hoist, size X71 drill, mounted on pneumatic tires; will handle 20 ft. steels.
2—Ingersoll-Rand, Model FM-2, with air hoist and IX71 drill, mounted on 3 steel wheels; will handle 20 ft. steels.
1—Ingersoll Rand drill No. 3122, with X71 drill, mounted on 4-wheel trucks; will drill up to 36 ft. deep holes.

WE ALSO HAVE A LARGE STOCK OF DRILL STEEL WITH MISCELLANEOUS TIMKEN BITS.

PUMPS

We have a large stock of centrifugal pumps, gas and elect. powered from 1½″ to 10″. Also Dredging and vertical pumps.

PARTIAL LIST ONLY—SEND FOR 64-PAGE STOCK LIST
All equipment is owned by us and may be inspected at one of our plants.
WE BUY—REBUILD—SELL AND RENT

—CHICAGO 12—
1118 So. Washtenaw Ave.

PHILADELPHIA 2
1511 Race St.

—PITTSBURGH 30—
P. O. Box 933 Dept. RP

— NEW YORK 7 —
30 Church St. Dept. RP

EQUIPMENT CORPORATION of AMERICA

BELT CONVEYORS

20″ Dings Magnetic Belt Conveyor, 5′ centers
30″ diam. Magnetic Belt Pulleys, 18″-30″ wide
24″ & 30″ Belt Conveyors, plain bearings
Head & Tail Pulleys Conveyor Assemblies
20″x60′ Slat Conveyor, on Roller Chain
16″x42′ Scraper Conveyor, in Steel Frame Trough
48″x1100′ Prewar 8-ply Conveyor Belt
Belt Trippers for 14-16-18-20-24″ Conveyors
Gravity Roller Conveyors, 6″ to 20″ widths
Merrick Weightometer for Belt Conveyors

CRUSHERS, ROLLS, MILLS

10″x16″ Traylor type H Jaw Crusher
12″x22″ Acme type D Jaw Crusher
9″x15″ Wheeling No. 2½ Jaw Crusher
8″x14″ Reliance Jaw Crusher
8″x12″ New Holland Jaw Crusher
A-C Gyratory type 3-D Reduction Crusher
11″ Traylor Bulldog Gyratory Crusher
16″x42″ A-C type B Double Roll Crusher
20″x16″ Stedman heavy duty Roll Ring Crusher
No. 2 Williams Semi-Vulcanite Hammermill
No. 0 Sturtevant Mill Rotary Fine Crusher
No. 16/40 Gruendler Aristocrat Peerless Grinder
Type 23 Furnace Engr. Simplex Coal Pulverizer

VIBRATING SCREENS

4′x10′ 2-deck Robins Gyrex Vibrating Screen
4′x7½′ 1-deck Robins Perfex Shaking Screen
3′x5′, 4′x5′ & 4′x7′ 1-deck Tyler Hummers
15-cycle Tyler Generators for Hummer Screens
Revolving Screens: 3′x11′ and 5′x18′
S-A Conical Screens: 36″ & 44″ diam., 84″ long

BUCKET ELEVATORS

10″x50′ Enclosed Belt Bucket Elevator
12″x50′ Enclosed Chain Bucket Elevator
6″ to 20″ Open & Enclosed Bucket Elevators
10″x45′ Continuous Belt Bucket Elevator
14″x50′ Continuous Chain Bucket Elevator
6″x26′ Open Chain Bucket Elevator
10″, 16″ & 18″ C-type Galv. Elevator Buckets

MISCELLANEOUS

Rehandling Clamshell Buckets: 1, 1½ & 2-yds.
107′ & 520′ Chicago Belted Air Compressors
Single & 2-drum Electric Hoists
4 & 8 ton 36″-g. Gas Locomotives
24″ & 36″-g. Side and End Dump Cars
Gear Reducers, Motors, Pumps, Elec. Carpullers
1500′ of A-121 Steel Bushed Eng. Chain

G. A. UNVERZAGT & SONS
136 Colt St. Irvington 11, N. J.

FOR SALE

Fairbanks-Morse Diesel Engine 150 h.p., Horizontal Type, Serial No. 803680, complete with starting engine, air tank, compressor and cooling tower.

Williams Patent Crusher, Serial No. 10092.

Both located at plant of Fredonia Valley Quarries, Fredonia, Ky., and will be sold f.o.b. plant.

FREDONIA VALLEY QUARRIES, INC.
FREDONIA, KY.

FOR SALE

1—3 ton per hour Kunts Hydrator
1—5 ton per hour Kunts Hydrator
Each replaced for larger sizes. These are rebuilt and 100% efficient—90% new.
1—3 ton per hour Clyde Batch Hydrator
1—6 ton per hour Clyde Continuous Hydrator
We have a number of lime feeders and a number of hydrate feeders.
1—2½ yard size dump car 30″ gauge track. Track gauge can be made to suit.
1—Portable Ingersoll Rand Air Compressor—315 cu. ft. per minute. Waukesha engine. First class condition—ready for use.
One complete Lime Hydrating Plant, including buildings.
One 212 Gallon Road Grader 12′ Blade—Excellent condition.

Lime & Hydrate Plants Co.
50 S. Beaver Street, York, Pennsylvania

For Sale—

SHASTA DAM SAND AND GRAVEL PLANT AND 10-MILE CONVEYOR EQUIPMENT

Including:

8500—36″ AND 42″ IDLERS.
Pulleys and Drives.
LATE MODEL 200 HP., 1800 R.P.M. GE MOTORS, complete with Starting Equipment.
Western Gear Reducers, 200 HP., 40 to 1 Ratio.
Dorr Hydroseparators and Classifiers.
30″ Tripper and Trestle.
Merrick Feedoweights and Weightometers.
All Types of Pumps, complete with Drives.
42″ Pendulum Boom Conveyors, 100′ and 200′.
Electric Line Equipment, Transformers, Motors and Supplies.
Other Miscellaneous Contractors' Equipment.

Subject to Prior Sale

Write, Wire or Telephone Redding 1440

COLUMBIA CONSTRUCTION CO., INC.
Box 579 Redding, California

1 Heavy Duty Osgood—¾ Steam shovel No. 1228.

NORTHWOOD STONE COMPANY
BELLEFONTAINE, OHIO

ROTARY SCREEN

Telesmith rotary screen, 5 sections, 5′ dia. 25 feet long. Complete with motor, switches, 2 extra pinion drive gears, 26 extra pieces of screen.

For complete information and location write to

JESSE S. MORIE & SON
Mauricetown, N. J.

FOR SALE

One complete, ready for use, Air Cylinder Hoist and Fork Lift, capable of Bearing 4 Concrete Blocks at a time, together with power and gravity conveyor—overhead rail and trolley with turn table. In use only 6 months. One Super K Besser Machine.

HUD CIN BUILDING PRODUCTS CO.
700 NORTH AVE. WESTFIELD, N. J.
WESTFIELD 2—2123

FOR SALE

CARS & LOCOMOTIVES

CARS

60—Dump, 20 cu. yd., lift door, automatic, K&J and Western.
5—Gondola, 50-ton, all steel.
100—Tank, 10,000-gallon, coiled and non-coiled.

LOCOMOTIVES

1—10-ton, Davenport, Diesel; built 1940.
1—70-ton, 0-6-0, steam switcher; ICC condition.
1—Westinghouse, 2-unit, 87-ton, 600 H.P., Diesel electric locomotive.

OTHER CARS & LOCOMOTIVES TOO!

IRON & STEEL PRODUCTS, INC.
41 Years' Experience
13492 S. Brainard Ave. Chicago 33, Ill.
"ANYTHING containing IRON or STEEL"

---

80 Ton American Locomotive, 0-6-0.
20 Ton Plymouth Locomotive, Std. Ga. Gas.
1 Yd. Northwest Gas Crane, Model 4.
⅝ Yd. Koehring Gas Crane, Model 301.
Shovel attachment for 41B, Bucyrus-Erie.
10 Ton Buf-Spr. Roller-Gas, 3 wheel.
1 Yd. Owen Type D Clamshell Bucket.
Shovel attachment for Northwest, Model 104.
McK-Terry Pile Hammer, size 3.
1 Yd. Page Dragline Bucket.

J. T. WALSH
Brisbane Bldg. Buffalo 3, New York

BARGAIN

CRUSHING PLANTS. Brand new Gruendler, 10 x 16, roller bearing jaw crushers with U-4 International gasoline power unit; V-Belt drive; mounted on 4 steel wheel truck. Available for immediate shipment. Write or wire us for photograph and full particulars.

ROZIER-RYAN COMPANY
3340 Morganford Road
St. Louis, Missouri

F-O-R S-A-L-E

INTERNATIONAL Used Machinery business established 25 years.

Write

USED MACHINERY
410 E. 4th Street
Bloomington, Indiana

FOR SALE:

One Stearns #7 Joltcrete, with mold boxes, for making 4" - 6" - 8" - 12" Blocks and Brick; all attachments for making specials. One Multiplex 16x16 and 16x20 Chimney Block machine; approximately 2000 three inch pallets, 4300 four inch, 2200 six inch, 7000 eight inch, 3000 twelve inch, 2000 Brick. 300—16x16 and 200—16x20, Stearns Skip Hoist; and 80 Chase racks new in 1945; one Pallet Dunker. All the above items can be seen in operation any week day; ready for removal in approximately five weeks; to be sold as a complete unit only.

COMAC BUILDERS' SUPPLY CORP.
186 Norman St. Rochester 13, N. Y.

1—9' x 65' Rotary Kiln, ⅝" shell
1—6' x 60' Rotary Dryer, ½" shell
1—Ruggles Cole 6' x 45' Rotary Dryer
2—4' x 20' Rotary Dryers
1—Raymond 5 Roll Mill, with 50 and 70 hp motors
1—Allis-Chalmers 6' x 15' Ball Peb Mill
1—16" Trough Belt Conveyor, 175'
6—Oliver Top Feed 8' x 6' continuous De-waterers
3—Hardinge Mills, 4½' x 24", 2' x 8"
500 hp of Motors, 10 to 75 hp, 3/60/440 volt, with starters

Partial List Only

WIRE, PHONE, WRITE for Full Details

BRILL EQUIPMENT COMPANY
225 West 34th Street
New York 1, N. Y.

FOR SALE

Steel Storage Tanks

6,000 — 8,000 — 10,000
Gallon Capacity

Reconditioned, Tested and Painted

THE PURDY COMPANY
122 S. Michigan Avenue
Chicago 3, Illinois

1—500 cu. ft. INGERSOLL-RAND Diesel portable air compressor.
1—20-ton WHITCOMB 36" Ga. Diesel Locomotive—rebuilt.
1—45-ton PLYMOUTH Type 0-4-0 std. ga. Diesel locomotive.
1—78-ton BALDWIN Type 0-6-0 Standard Ga. Side Tank Locomotive—new 1923—rebuilt.
1—80-ton BALDWIN Type 0-6-0 Standard Ga. with separate tender—rebuilt.
1—20-yd. WESTERN Air Dump Car, Vertical Cylinders—reconditioned.
2—2200 and 3300 cu. ft. Chicago Pneumatic stationary Air Compressors—400 & 500 H.P. Synchronous motors.
1—40-ton American Diesel Locomotive Crane—1942.

B. M. WEISS COMPANY
Girard Trust Company Building
PHILADELPHIA 2, PA.

FOR SALE

2—Sullivan 7B Shortwall Undercutters.
1—50 HP, 440 volt, A.C.
1—50 HP, 250 volt, D.C.
(BOTH WITH ACCESSORIES)

E. G. KRESS
Certain-teed Products Corp.
120 S. LaSalle St. Chicago 3, Ill.

24" x 36" Farrel Jaw Crusher, 14B
36" x 15" Farrel Jaw Crusher
28" x 12" Climax Jaw Crusher
36" x 6" Farrel Jaw Reduction Crusher
30" x 48" Single Roll Gruendler Crusher
No. 5N Allis-Chalmers Gyratory Crusher
40" TY Traylor Reduction Crusher
1'8" TY Traylor Reduction Crusher
30" x 14" Allis-Chalmers Double Roll Crusher
25" x 15" Farrel Double Roll Crusher
Barber-Greene Model 82-A Bucket Loader
12' x 4' Telsmith Single Deck Vibrator Screen
40" x 12' Revolving Screen
48" x 12' Revolving Screen
18' x 3' Acme Trunnion Drive Revolving Screen
45' x 18" Belt Bucket Elevator
55' x 18" Bucket Link-Belt Chain Elevator with SH856 chain—brand new
66' x 30" Bucket Belt Elevator 12-ply Belt
126' Center 30" Belt Conveyor Complete with Speed Reducer
135' Center 24" Belt Conveyor Complete with Speed Reducer
96' Center 18" Belt Conveyor Complete with Speed Reducer
85' Center 18" Belt Conveyor Complete with Speed Reducer

FRANK A. KREMSER & SONS, INC.
3435-45 NORTH 5TH STREET
PHILADELPHIA 40, PA.
Office Phone Regent 7272 — Night Phone Hancock 7959

DEMPSTER DUMPSTERS
Model 150-B

BROOKS LOAD LUGGERS
Models 150-A—CH-150 & 200

Immediate delivery

These hoists and buckets were used less than 1 year. Priced at one-third original cost.

GENERAL TRADERS
2675 Grand Ave. Chicago 12, Ill.

Cedar Rapids 36x14" Jaw Crusher and Belt
Austin Model 105 Gyratory Crusher, good
Superior No. 6 and No. 8 Gyratory Fine Reduction Crusher
Allis C Gates No. 6 Gyratory Crusher
Allis C Type B Reduction Gyratory Crusher
Austin No. 7½ Gyratory Crusher
McLanahan & S 18x24" Sgl Roll Crusher
3—Allis C 36x16" Dbl Roll Crushers
Allis C Superior 54x24" Dbl Roll Crusher
2—Allis C Rod Mills 3x9' Motor driven
¾ yard P & H Crawler shovel
1 Yard P & H Crane Dragline
Barber-Greene & Nelson Bucket Loaders
75 to 300 HP Fairbanks Diesel Engines
200 Bottom dumpfloor trucks, capacity 4-5 cu. ft. roller bearing wheels, excellent condition, low price
Gasoline & Diesel Trucks, various sizes

MID-CONTINENT EQUIPMENT CO.
710 Eastgate Pa 2290 St. Louis 5, Mo.

NEW CONVEYOR BELTING IN STOCK

260' Quaker 18" 5-Ply, 28 oz. ⅛" x 1/32"
520' Quaker 20" 4-Ply, 28 oz. ⅛" x 1/32"
490' Quaker 20" 5-Ply, 28 oz. ⅛" x 1/32"
47' Quaker 36" 6-Ply, 28 oz. ⅛" x 1/32"

Conveyor belting delivery from the factory is still tough. Better anticipate your requirements now—troughing rolls, head and tail pulleys, etc., now in stock.

EIGHMY EQUIPMENT COMPANY
526 W. STATE ST. ROCKFORD, ILL.

FOR
IMMEDIATE DELIVERY
OF
RUBBER PRODUCTS

Conveyor Belting...Transmission Belting...Elevator Belting...Fire, Water, Air, Steam, Suction or Welding Hose, etc.

CALL, WIRE or WRITE
CARLYLE
THE RUBBER HEADQUARTERS

CARLYLE RUBBER PRODUCTS ARE NEW, GUARANTEED & LOW PRICED

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom	Covers	Width	Ply	Top-Bottom	Covers
48"	8	1/8"	1/16"	20"	5	1/8"	1/32"
42"	5	1/8"	1/16"	20"	4	1/8"	1/32"
36"	6	1/8"	1/16"	18"	4	1/8"	1/32"
30"	6	1/8"	1/16"	16"	4	1/8"	1/32"
30"	5	1/8"	1/16"	14"	4	1/16"	1/32"
24"	5	1/8"	1/32"	12"	4	1/16"	1/32"
24"	4	1/8"	1/32"				

Inquire For Prices - Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

Inquire For Prices - Mention Size and Lengths

ENDLESS "V" BELTS

"A" WIDTH All Sizes | "D" WIDTH All Sizes
"B" WIDTH All Sizes | "E" WIDTH All Sizes
"C" WIDTH All Sizes | Sold in Matched Sets

Inquire For Prices - Mention Size and Lengths

PROTECT THAT PLANT
FIRE HOSE

APPROVED SPECIFICATION HOSE
EACH LENGTH WITH COUPLINGS ATTACHED

Size	Length	Per Length
2½"	50 feet	$28.00
	25 "	16.00
2"	50 "	23.00
	25 "	13.00
1½"	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

SPECIAL OFFER . . . HEAVY DUTY
RUBBER HOSE

WATER HOSE
Each Length with Couplings Attached

I.D. Size	Length	per Length
¾"	25 feet	$4.25
1"	50 "	8.00
	25 "	6.25
1¼"	50 "	12.00
	25 "	7.50
	35 "	10.50
	40 "	12.00
1½"	50 "	15.00
	25 "	10.00
	35 "	14.00
	50 "	20.00

AIR HOSE

I.D. Size	Length	per Length	Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 "
¾"	25 "	6.25	2.50 "
	50 "	12.50	2.50 "
1"	25 "	10.00	3.50 "
	50 "	20.00	3.50 "

LARGER SIZES ALSO AVAILABLE
All Prices—Net—F.O.B. New York

CARLYLE RUBBER CO., INC.
62-66 PARK PLACE — NEW YORK, N. Y.

CRUSHERS

GYRATORY: 42" Gates K. 30" Superior McCully (like new). 20" Superior McCully Gates Nos. 12, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.). Telsmith Nos. 4, 5, 6, 8C, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.
JAW TYPE: Traylor 60x34, 48x60, 42x48, 34x72. Superior 54x36 & 24x36. Buchanan 30x42. Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x36, 15x36.
REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 3-F & 40. Traylor 36" TZ, 8", 10", 13". Super. McCully 6"x10". Newhouse 5, 7, & 10". Symons Cone & Disc 7', 3' to 4'.
ROLLS: Allis-C. 12½x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 36x36 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16. Etc.
HAMMERMILLS: Williams No. 1, 2, 3, 4, 5, & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40. Etc.
MILLS: Kennedy Ball 4x6, 5x6 & 5x8. Marcy 8x8 & 10x8. Hardinge 6'x3', 8'x30" & 6'x9". Misc. Tube Mills 5' & 6'x22'. Sturtevant Ring Roll. Raymonds, Kents, Fuller Lehigh, Etc.
CRUSHING PLANTS: No. 65 Diamond No. 22 Pioneer 5x24, 10x30 Good Roads, 9x40 Austin-Western, 9x36 C.R.

MISCELLANEOUS ITEMS

Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Elevators, Excavators, Generators, Hoists, Kilns, Draglines, Drag Scrapers, Dredges, Drills, Engines, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Shacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. (I have equipment at many points in the United States and Canada. What you need may be near your plant.)

ALEXANDER T. McLEOD
7229 Rogers Avenue — CHICAGO (45)

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C., for sale at Attractive Prices. Large Stock. New and Rebuilt. All fully guaranteed. Send us your Inquiries.

V. M. NUSSBAUM & CO.
FORT WAYNE, IND.

FOR SALE

Rock & Panel attachment for Stearns Clipper Stripper.
600 Pallets, 12" Cast Iron.

BATTLE CREEK CONCRETE PRODUCTS CO.
BATTLE CREEK, MICHIGAN

FOR SALE

One new 48"x10' Jeffrey-Traylor vibrating feeder. Operates on 440 V., 60 C., 1 P. Generator. For full particulars, contact

BASIC REFRACTORIES, INC.
MAPLE GROVE, OHIO

SCRAPER WAGON

Garwood scraper, towed type, hydraulic operated, 12 cu. yd. capacity—model 400—4 tires 14:00x20, 2 tires 13:50x20—tires in very good condition.

For complete information and location write to

JESSE S. MORIE & SON
Mauricetown, N. J.

B-Erie 1¼-yd. gas-air GA-3 shovel, rebuilt.
Marion electric shovels, 4, 3, and 1-yd.
Bucyrus 50B and 80B steam shovels.
Allis Chalmers 27" Gates 12K gyratory crusher.
Allis Chalmers Superior 54"x24" crushing rolls.
Euclid 6-yd. bottom dump crawler wagons (8).
Draglines, 2-yd. Diesel; 3-yd. electric.
Porter, Vulcan 18-ton stm. locos., 36", rebuilt.
Whitcomb 8-ton gas locomotives, 24" ga., (4).
B-Erie 52B Diesel 2-yd. shovel front att.

H. Y. SMITH Co., 828 N. B'way, Milw. 2, Wis.

FOR SALE

2—315 cu. ft. 1000 lb. pres. Ingersoll-Rand, Models 315 and 315A portable Air Compressors with 105 HP Waukesha Oil Engines, complete with accessories.

SLIPRING MOTORS

QUA.	HP	MAKE	VOLTS	RPM	TYPE
1	700	G.E.	2200	393	MT-432
1	260	Ilgner	440	600	EMV-65
1	15	G.E.	440	845	I
2	60	West.	220	1800	CW
1	50	West.	220/440	1120	HF
1	50	Chandeyssen	220/440	1800	MT

DUQUESNE ELECTRIC & MFG. CO.
6428 Hamilton Ave. — Pittsburgh, Pa.

EXCELLENT VALUES

30 Ton 1942 Model 30S Orton Steam Locomotive Cranes.
20/40 Ton Steel Stiffleg Derrick.
25 Ton 1942 Model Whitcomb Gas Locomotive. Standard Gauge.
2 and 3 Drum Steam, Gasoline and Electric Hoists. All Sizes.
1¼ Yd. Lorain 75-A Crane & Dragline.
500 & 900 ft. Portable Air Compressors.
50 HP to 1200 HP Diesel Engines.
18 Twenty Yard Air Dump Cars.
35, 80, 150, 200 & 500 HP Boilers.

MISSISSIPPI VALLEY EQUIPMENT CO.
515 Locust Street — St. Louis 1, Mo.

FOR SALE—TRANSFORMERS

3—Allis-Chalmers, 15 KVA, type CBS, single phase, 60 cycle, oil cooled, 6900/-230/460 volt, serial 1565504-5-6. Very good condition priced $148 each, located Pittsburg, Kansas, immediate delivery.

COOLEY GRAVEL CO.
Chillicothe, Missouri

FOR SALE

SHOVELS—CRANES

Lorain 77, 1½ yd. shovel-crane. Diesel. Rebuilt.
Link-Belt K48 2½ yd. dragline, new 1935.
Lima 1½ yd. gas shovel.
Osgood shovel, 1¾ yd., gas.
Marion 37 shovel, steam, 1¾ yds.
Marion Model 450 steam shovel, 1¼ yds.
Marion Model 450 gas-elec. shovel, 1¼ yds.
Marion Model 331 gas shovel.
P & H Model 700, crane, 1¾ yd. cap.
P & H Model 650, shovel-crane, 1¼ yd. Rebuilt.
P & H 600 crane, 1 yd. capacity.
Bucyrus-Erie 50B steam shovel, 2 yds.
Monighan 3½W Diesel dragline, 92 ft. boom.
Osgood 1¾ yd. shovel with spare parts.
Osgood 1 yd. shovel-crane.
Lorain 75B 1¼ yd. shovel.
Bucyrus-Erie elec. tunnel shovel, 1 yd.
Osgood shovel, 1¼ yds., gas.
General ½ yd. crane and backhoe.
Byers Bear Cat one-half revolving crane.
Bucyrus-Erie Model 37 1½ yd. shovel.
Byers Bear Cat ½ yd. crane.
Gantry crane, 5 ton, 46 ft. span, 15 ft. overhang.
Morgan 10 ton, overhead crane, elec., 39'5" span.
McMyler 20 ton loco. steam crane.
Ohio 22½ ton loco, elec. crane.

TRACTORS AND MISCELLANEOUS

Allis-Chalmers WM bulldozer with Hough ⅓ yd. loader.
Allis-Chalmers HD-7 tractor with Trailbuilder.
Allis-Chalmers WS tractor with bulldozer.
Allis-Chalmers HD-14 tractor with bulldozer.
Cletrac 40D tractor with angledozer.
Allis-Chalmers K tractor with bulldozer.
Model 35 Caterpillar with double drum winch.
Int. 1-20 tractor with Hough ½ yd. front end loader.
Allis-Chalmers Model L tractor with bulldozer.
2 Dempster Dumpsters with 20 buckets.
Bucket elevator, vertical, 35', 22" buckets.
Gallon 10-ton, 3 wheel roller.
Dredge, 12" Diesel hydraulic.
Dredge, 10" Diesel hydraulic.
Kennedy-Van Saun Rotary Screen, 4'x8'.
Drill steel, 1¼", hitted and shanked.
500 drill bits, 1-B and Timken. Various sizes.
1-B Model 50 drill sharpener, complete.
20 steel stone skips, 2-3 yds. cap.
Several dredge pumps available from 6" up.
Besser K3 block plant, 2000 blocks cap.

CONCRETE PLANT AND EQUIPMENT

Butler concrete plant, 2 compts. agg. one cement.
Butler agg. bin, 2 compts. 110 tons with mixer.
Blaw-Knox 200 tons steel storage bin.
Ransome 3½ yd. truck mixer unmounted. Rebuilt.
Jaeger, 4 yd., truck mixer on Mack truck.
Rex, 4 yd., truck mixer on Autocar.
Mixer 28S, Smith electric stationary.
Mixer 56S, Smith tilting skid mounted.
Mixers, two Ransome 42S, elec. Right and left.
Mixer, Koehring 28S, gas, skid mounted.
Mixer, Jaeger 14S, on pneumatic tires.
Fuller Kenyon bulk cement unloader, portable.
Koehring 34E dual drum paver.

ASPHALT PLANTS

Standard Plant 3000 lb., cap. Complete, self-contained, including Diesel generating set.
Cedar Rapids Portable 60-80 tons per hr. cap.

CRUSHERS—CRUSHER PLANTS

Roll, 54x24, 54x20, 48x36, 30x24.
Allis-Chalmers 42" gyratory.
Gyratory crusher: K.V.S. 30, 37-S, 49; 32, 8A, 8B; Traylor 8"; McCully, 13", 8", 6".
Allis-Chalmers 6" fine reduction crusher.
Jaw: 6x12, 9x16, 10x20, 14x24, 12x26, 13x30, 16x32, 24x50.
Complete Rock Crushing, Sand and Gravel Plants.

BUCKET—STONE SKIPS

Blaw-Knox ⅞ yd. Clam, digging.
Hayward ⅞ yd. Clam, digging.
⅝ yd. Williams Clamshell, digging.
½ yd. Haiss Clamshell, rehandling.
¾ yd. Haiss Clamshell, rehandling.
10 Battleship 2-3 yd. steel stone skips.
Hayward ¾ yd. Standard Orange Peel.

LOCOMOTIVES—CARS

Whitcomb 32 ton std. ga. gas locomotive.
Mack 60 ton std. ga. gas locomotive.
Whitcomb 20 ton 36" ga. Diesel loco. Rebuilt.
Baldwin-Westinghouse 25 ton elec. loco., std. ga.
American 45-ton, steam, saddle tank.
Vulcan 30-ton, steam, saddle tank.
Vulcan 25-ton, steam, side saddle loco.
Vulcan 8-ton, std. gauge, gas.
Vulcan 6-ton, gas, 36" gauge.
Porter 12-ton, saddle tank, steam, 36" gauge.
3 Western Steel, 20 yd. air dump cars.

RICHARD P. WALSH CO.
30 Church St. New York, N. Y.
Telephone: Cortlandt 7-0723 Cable: RICHWALSH

24"x36" TRAYLOR Jaw Crusher, A-1. $4200.00.
20"x36" IOWA, RB. Jaw Crusher, A-1. $4250.00
24"x36" LIPPMANN Jaw Crusher, New. $8000.00.
No. 13-B Telsmith Gyratory, like new. $2000.00.
Wagon Drill, INGERSOLL-RAND, late model X-71, 10 ft. changes. Guaranteed. $750.00.
BROOKS Load Lugger, late model CH-200, 2 cu. yd. buckets, A-1. $600.00.
DEMPSTER-DUMPSTERS, late model LF-200, with buckets. $400.00.
HUG Rear Dump Truck, 12 cu. yd. Heil Boulder type Dump Body, 150 HP Cummins Diesel engine, New 1941. Orig. cost $13,700.00. A-1. $5500.00.
SCHRAMM, 315 cu ft. actual air, portable Compressor. Latest model. Practically new. $2500.00.
SCHRAMM, 160 cu. ft. actual air, Compressor, —gasoline, rebuilt, guaranteed. $1100.00.
SAUERMAN. Dragscraper 1¼ yd. American D. D. Hoist 80 H.P. Waukesha Power Unit. Good condition. $1200.00.

M. WENZEL
2136 Jefferson St. Kansas City, Mo.

CRUSHING EQUIPMENT

1—Pioneer Portable Gravel Plant.
1—Pulverizing Unit, Williams "6", 140 HP Buda Power, Screen, Under Conveyor, Apron Feeder SOLIDS.
1—Primary Crusher w/ 1236 Jaw, Power Unit, 3-axle chassis, w/ under conveyor, cheap.
1—Cedarapids "2036" RB Jaw Crusher.
1—Cedarapids "1836" RB Jaw Crusher.
1—Universal 2036 RB Jaw Crusher.
1—Gilson "15" Pulverizer Plant w/ power, etc.
1—Stephens-Adamson 1624 Roll Crusher.
1—Atlas 24"x60' NEW Portable conveyor.
1—Atlas 18"x60' NEW Portable conveyor.
1—Vibrating Screen, 3'x8' NEW.
1—Universal 36"x5' Vibrating Screen. Used.
2—Bins, 21 yd. Jack-leg. NEW.

SHOVELS AND CRANES

1—1 yd. Osgood shovel, w/ crane boom.
1—P&H 300A ½ yd. Shovel.
1—Universal ½ yd. truck crane.
1— ½ yd. Truck Crane 3-Axle truck.
1—Page "RC" NEW ½ yd. Drag Bucket.
1—Link-Belt Speeder ½ yd. Drag Bucket NEW.
1—Link-Belt Speeder ¾ yd. Drag Bucket NEW.
1—Williams "12M" ½ yd. New Clam Bucket.
2—½ yd. Rebuilt Clam Buckets.

POWER UNITS

1—Minneapolis-Moline 38 HP gas power units NEW.
1—Minneapolis-Moline 38 HP Power Unit. NEW.
1—Minneapolis-Moline 26 HP Power Unit. NEW.
1—Minneapolis-Moline 250 HP Used Power Unit.
1—LeRoi 12 HP 4 cylinder Power Unit. Reconditioned.
1—Waukesha-Hesselman 46 HP NEW engine.
10—Briggs & Stratton 6 HP gas engine. NEW.

AIR EQUIPMENT

1—Schramm "105" Port. Compressor.
1—Davey "105D" Port. Compressor.
1—Sullivan "105" Port. Compressor.
1—Davey "215D" Port. Compressor.
2—Davey "210D" New Compressors.
1—Cleveland "DR-30" NEW Wagon Drill.
1—Wayne 7 cu. ft. new shop compressor.
20—Wayne 2.2 cu. ft. new shop compressors.
1—Wayne 20 cu. ft. new shop compressors.

MISCELLANEOUS

1—Rex "40M" 4" Pump. NEW.
1—Rex "10M" 2" Pump. NEW.
6—Rex "3M" 1½" Pumps. NEW.
1—Highway Cinder Spreader. NEW.
1—Kohler 1500-Watt Lite Plant. NEW.
1—Homestead "JMi" New Hypressure Jenny.

"We Own This Equipment"

EIGHMY EQUIPMENT COMPANY
526 W. State Street Rockford, Illinois

FOR SALE

Link-Belt speed reducer of the following specifications: Type D12 right hand. Ratio 56.4 to 1, input speed 870 rpm, output shaft ratio 37.3 horsepower at 17.2 rpm, service factor 1. This unit is surplus and has never been in use. Price upon request.

JAMES RIVER
HYDRATE & SUPPLY CO., INC.
Buchanan, Virginia

FOR SALE

1—20 ton Locomotive Steam Crane Link-Belt—No. 591. 50 foot Boom. New Boiler installed Oct., 1944. Complete with 1½ yard Blaw-Knox Rehandling Bucket. Electric Lights. Condition—Good.

Price .....$4500.00 f.o.b. Quarry

BLUE ROCK, INCORPORATED
Box 110 Washington C. H., Ohio

FOR SALE—A GOOD TIME TO BUY

Jaw Crushers two 24x36—No. 30 Williams Hammermill.
Pressure Cylinders 50 ft. x 6 ft. 125 lbs.
Ring Roll Crusher No. 2400—6x6 ball mill with balls.
Switch Loco. 70 ton 6 wh. 120 lb. sep tender.
Dryer 40 ft. x 66" wt. 30,000 lbs.
Cat Tractors 3 type L one with bull dozer.

A. V. KONSBERG. No. 8 S. Dearborn St., Chicago

FOR SALE

Approximately 6,000 12x16 steel cored pallets.

CONCRETE & CINDER BLOCKS PRODUCTS CO.
10 Buell Rd. Rochester 11, N. Y.
Genesee 2121

FOR SALE BY OWNER

HAMMER-MILL, Gilson 16", elec. power, automatic feeder, belt discharge, mounted on chassis $4,400.00
AIR COMPRESSOR, Gardner-Denver, 220' with Waukesha 6 cyl. motor, on skids.....$1,400.00
WAGON DRILL—with air hammer, drills, extra drill points, 200' pipe, valves, air hose and fittings. (Sullivan).....$700.00

JOLIET CASH & CARRY LUMBER CO.
816 Sherman Street Joliet, Ill.

AIR COMPRESSORS

BELTED: 355, 532, 676, 1000, 1200 & 1570 Ft.
ELECTRIC: 478, 676, 897, 1282, 1722 & 2200 Ft.
DIESEL: 605, 857 & 1005 Ft.
PORTABLE GAS: 110, 160, 220, 310, 540 & 1300 Ft.
STEAM: 49, 310, 538, 1200, 2200 & 3600 Ft.

CLAMSHELL BUCKETS, SKIPS & GRAPPLES

Owen R A & H Stone Grapples.
2 Yd. OWEN Type S Material Handling.
1½ Yd., 1 Yd. & ¾ Yd. HAYWARD Class E.
18 Steel Skips 6½ x 6 x 2½.
5 Ton Bucyrus Rock Grabs.

CRANES AND DRAGLINES

1—16 Yd. 160' Boom Electric Caterpillar Dragline.
¾ Yd. 5 Ton O & S 30 Ft. Boom.
12 Ton NORTHWEST 50 Ft. Boom Gas.
20 Ton LIMA, 750 Diesel, 65 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Loco.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.

CATERPILLAR SHOVELS

2 Yd. Marion Steam Shovel.
¾ Yd., 1¼ Yd., 2 Yd. & 4 Yd. MARION Electrics
1 Yd. NORTHWEST Gas.
1½ Yd. LIMA Diesel.
1¼ Yd. BUCYRUS 41B Steamer.
4 Yd. Bucyrus 150B Electric. Also 3 yd. Erie Elec.
5 Yd. P & H Model 1500 Elec.

DUMP CARS

46—KOPPEL, 1½ Yd. 24 & 30 In. Ga., V Shaped
15—2 Yd., 3 Yd., 4 Yd., 6 Yd., 12 Yd., 36 In. Ga
20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.
15—Std. Ga. 50 Ton Battleship Gondolas.

BOX, FLAT & TANK CARS

9—50 ton std. ga. heavy duty flat cars.
30—8000 gal. cap. tank cars.
30—40 ton std. ga. box cars.

HOISTING ENGINES

Gas: 15, 30, 60, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
Steam: 6½x8, 7x10, 8¼x10, 10x12, 12x24.

DIESEL UNITS

75, 90, 180, 200 HP. F. M. Engines.
175 KVA Westhington 3/60/2300.
275 KVA Fairbanks 3/60/2300.
343 KW, Fairbanks-Morse 3/60/480 V.

BALL, ROD AND TUBE MILLS

5'x22' HARDINGE CON. Dry Ball Mill.
6'x22' HARDINGE CONICAL Pebble Mill.
8'x22' HARDINGE CONICAL Ball or Pebble Mill.
4x8, 8x8 & 10x9 Straight Ball Mills.
4x16, 5x18 & 5x22 Tube Mills & 6'x22'.
3½x8 & 5x7 Air Swept Tube Mills.
2x4½, 6x12 & 5x12 ROD MILLS.

PULVERIZERS

JEFFERY, 24x30 & No. 1 Sturtevant Ring Roll.
RAYMOND Auto Pulverizer No. 0000, 0 & 3.

STEEL STORAGE TANKS

10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.

SEPARATORS AND COLLECTORS

8, 10 and 14 ft. Separators, Gayco & Bradley.

ROLL CRUSHERS

36x60 Fairmount & 36x20 Diamond.

JAW CRUSHERS

10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 24x8, 28x6, 30x10, 20x15, 26x13, 30x15, 30x13, 36x15, 36x30, 36x18, 36x14, 36x9, 36x6, 36x10, 36x24, 42x9, 48x24, 48x36, 60x42, 84x66, 36x16, 9x36.

CONE & GYRATORY CRUSHERS

5 No. 19, 25, 37 & 49 Kennedy.
18 in. 24 in., 30 in., 36 in. & 48 in. Symons Disc
4—10 TZ Traylor 4 ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory, also 16 inch & 18 in. Traylor T. Gyratory.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8, 9½ & 21.
7—Symons Cone, 2, 3, 5½ and 7 ft.
6, 10 & 13 Inch Superior McCullys.

CONVEYOR PARTS

BELT: 1000 Ft. 60 In., 700 Ft. 40 In., 600 Ft. 36 In. 800 Ft. 30 In., 1642 Ft. 24 In., 517 Ft. 20 In., 297 Ft. 18 In., 500 Ft. 16 In., 200 Ft. 14 In.
IDLERS: 54 In., 42 In., 36 In., 30 In., 24 In., 20 In., 18 In., 16 In. & 14 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft. 24 In., 30 In. & 36 In. Sections

ROTARY DRYERS AND KILNS

36 In.x20 Ft., 3 Ft.x20 Ft., 4 Ft.x30 Ft., 54 In. x30 Ft., 42 In.x34 Ft., 5 Ft.x30 Ft., 5 Ft.x16 Ft., 5 Ft.x60 Ft., 6 Ft.x60 Ft., 6 Ft.x20 Ft., 6 Ft.x70 Ft., 10x30, 7½x100 & 8x110 Ft. Kilns.

STEEL DERRICKS

GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom. 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.

LOCOMOTIVES

GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14, and 30 Ton.
STEAM: 9 Ton, 30 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 3 Ton, 5 Ton, 40 Ton.
DIESEL: 4, 8 & 15 Ton.

SCREENS

VIBRATING: 2x4, 3x8, 12x3, 3x3, 3x5, 4x5, 4x8, 4x10, 48x72, 4x12, 1, 2 & 3 Deck.
HUMMER ROTEX, NIAGARA & ROBINS.
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x33, 4x24, 5x30, 5x20, 6x20.

R. C. STANHOPE, INC.
COMPLETE PLANTS BOUGHT AND SOLD
60 East 42nd Street NEW YORK 17, N. Y.

FOR SALE

One 8x8x16 Mold Box and 750 Pallets.
One 4x8x16 Mold Box and 500 Pallets.
Tamper feet and quick attachment assembly.

BLACK-BROLLIER, INC.
802 Blodgett Ave. Houston 6, Texas

FOR SALE

BINS: 1—Bulk Cement Bin, twelve hundred (1200) bbl., 4 compartment, with four gates, with motor driven unloading screw and fully enclosed bucket elevator 65', buckets 12" wide x 8" x 8", with or without two 12" screw conveyors 41' with 5 H.P., 220 volt, A.C. motors with speed reducers and weigh batcher with Fairbanks-Morse springless Dial printograph scale. This bin could be used as combination aggregate and cement bin.

1—18' dia. cylindrical, 3 compartment, Cement Bin, without bucket elevator, but with 12" screw conveyor 41', with 5 H.P. motor and speed reducer.

BUCKET ELEVATOR: 1—Boot Bucket Elevator, 65' ce ce with 12" malleable iron buckets on heavy belt, with or without cement unloading screw.

SCREW CONVEYORS: 2—12"x14' ce and 2—12"x16' ce; each complete with 5 H.P. motor and speed reducer. Condition like new.

BOILER: Erie City 150 H.P., self-contained, Economic type, ASME code, 150 lbs. pressure, complete with all fittings.

COMPRESSOR: 1—Ingersoll Rand 75 H.P., 440 volt, A.C. Motor Compressor, capacity 445 CFM, multi-cylinder.

DRAG SCRAPER: Sauerman 1 yd. capacity with Crescent drag scraper bucket, 60 H.P. gasoline powered, 2 speed, Hoist, all cables, blocks, etc.

GYRATORY CRUSHERS: All sizes and types.

JAW CRUSHERS: 1—36 x 42, all steel, deep frame type, with or without 150 H.P., slip ring, motor and controls. Also, sizes 12 x 24 to 48 x 60.

REDUCTION CRUSHERS: Traylor 4 ft., type TY, with motor, V-belt drive, etc., complete.

ROLL CRUSHERS: 1—12" face, 20" dia. New condition.

SWINGER: 1—Clyde 5 H.P., electric, powered with G.E., 5 H.P., 3 phase, 60 cycle, 440 volt, slip ring Motor with drum controller.

VIBRATOR FEEDER: Jeffrey Traylor 6' x 6', open pan deck, powered by four No. 5 heavy M-4 motors, including motor generator equipment for 440 volt, 3 phase, 60 cycle operation; capacity 1500 tons of earth and stone per hour, maximum size stone 3' cubes.

PULVERIZERS: 3—Raymond, 5 roll, low side, Mills with 211 fan cyclone separator.

GAS HOIST: Clyde two drum with swinger, 50 H.P. Climax motor.

MINE HOISTS: 1—150 H.P., drum 72 x 72". 1—450 H.P., drum 10' dia., 7' face. 1—600 H.P., 96" dia., 116" face. 1—120" dia. x 120" face, with 500 H.P. motor. All 3 phase, 60 cycle, 2200 volt.

LOCOMOTIVES: 1—Lima 80 ton, steam, 6 wheel, Switcher with tender, thoroughly modern, excellent condition. Sale or rent.

SCREENS: Robins, Link-Belt, Simplicity, Nordberg, Telsmith, Traylor; all sizes.

SCRAPER: LeTourneau 6 yd. model J6, 8 yd. capacity heaped; two tires, front; four rear, size 10 x 20.

SHOVEL: Bucyrus Erie 120-B, 5 yd. capacity, 4 yd. manganese rock dipper, Ward Leonard control equipment, 3 phase, 60 cycle, 2300 volt. 1—Bucyrus Erie 50-B Diesel Dragline, 70' boom, capacity 1½ yd., with light plant.

TRACTORS: Model 75, diesel, Caterpillar, serial 2E972, with motor B82R, LaPlant-Choate Bulldozer model R8C; LeTrurneau power control unit. Lynn 20 ton, 6 cylinder, Hercules engine, rear dump, steel and wood body.

TRANSIT MIX TRUCKS: 4—Mack model EQSW, 10 wheel, dual Timken drive, with 4 yd. Jaeger or Rex, Hercules powered, Mixers

PUMPCRETE MACHINE: Model 190, Waukesha 40 H.P. gas motor, sub hopper, with tools, valves, fittings and 500' pipe; rebuilt.

CRANE: Lima 12 ton capacity, 45' boom, powered with 85 H.P., D8800 diesel motor.

OVERHEAD ELECTRIC CRANE: Shepard 7½ ton, four motor, bucket operating, 35' span, 550 volt, D.C., cage control.

• • •

A. J. O'NEILL
Lansdowne Theatre Building
LANSDOWNE, PA.
Phila. Phones: Madison 8300-8301

DERRICK

Double stiffleg derrick mounted on 20' high tower designed to handle 50 tons at 50' radius. Mounted on rectangular tower 44' wide x 40' deep. One 46' mast on each front corner with 80' boom and 60' stiff-legs. This derrick has dual equipment throughout and can be separated into two complete units.

For complete information and location write to

JESSE S. MORIE & SON
Mauricetown, N. J.

DO YOU NEED STEEL?

1—Structural Steel Overhead Crane Runway 780 ft. long. This item is made up of 24" I Beams weighing 79.9-lb., 10" channels, weighing 15.3-lbs., 80-lb. rail. The supports are made up of 12" I Beams weighing 31.8-lbs., 12" channels weighing 20.7-lbs. and 2½"x3"x5/16" angle bracing. Total weight approximately 250 tons.
1—Kennedy-Van Saun heavy duty Slugger Roll Crusher 36" dia.x48".
1—Kennedy-Van Saun heavy duty Hammer Mill Crusher 54" dia.x48".
1—Structural Steel Building 60' long x 24' wide.
None of this equipment has ever been used.

Write, Wire, Telephone
F. CLAY OXFORD
Tel. 199 Foreman, Ark.

DROP BALLS

FORGED STEEL — ANY WEIGHT
Write for Prices
FORREST E. SMITH
MANUFACTURERS REP.
Lake Shore Drive Asheville, N. C.

RAILS NEW AND RELAYING

TRACK ACCESSORIES
from 5 Warehouses
L. B. FOSTER COMPANY
PITTSBURGH • CHICAGO • NEW YORK

RELAYING RAIL

TRACK ACCESSORIES
MIDWEST STEEL CORP.
GEN. OFF.: CHARLESTON 21, W. VA.
WAREHOUSES:
CHARLESTON, W. VA.
KNOXVILLE, TENN. • PORTSMOUTH, VA.

New — RAILS — Relaying

ALL SECTIONS

Also contractors' equipment, "V" shaped and Western cars, 24 and 36-in. gauge, portable track, gas locos, frogs and switches. Attractive prices quoted. Wire, write or telephone for quotations.

M. K. FRANK
Park Bldg.
Pittsburgh, Pennsylvania

480 Lexington Ave.
New York, N. Y.
Blitz Bldg.
Reno, Nevada
Havana, Cuba

FOR SALE

Complete Concrete Pipe Plant doing big business in Central Pennsylvania.

WM. M. CHASE
15 LINWOOD AVE. BUFFALO 2, N. Y.

LOCOMOTIVES — CRANES

1—80 ton Baldwin 0-6-0 separate tender switcher, built 1925. A.S.M.E. boiler, piston valve, Walschaerts valve gear, overhauled and up to date on all I.C.C. requirements.

1—20 ton Whitcomb diesel-Mechanical 36" gauge locomotive, four wheel type.

3—20 ton gasoline locomotives, 4 wheel type, built 1941 and 1942, overhauled, standard gauge.

1—25 ton American Diesel Locomotive Crane, built 1942.

1—Williams Clamshell digging bucket, 1 yd. capacity, heavy duty type with teeth, practically new condition.

Birmingham Rail & Locomotive Co.
BIRMINGHAM 1, ALABAMA

PLANTS FOR SALE

FOR SALE
COMPLETE HYDRATE PLANT
Steel Construction—Capacity 5 tons per hour—Pennsylvania Hammer Mill—Clyde Hydrator.

Limestone Deposit with natural drainage located in York County, Penna., near Penna. Railroad, suitable for Road Stone, Ballast, Concrete and Lime Dust.

STEACY & WILTON COMPANY
WRIGHTSVILLE, PENNSYLVANIA

NEW LIME DUST PLANT

We offer a high capacity complete portable outfit, six months old or less (except shovel). Lease can be assigned. Located northern Illinois. Good reason for selling. Immediate possession. Requires $70,000 investment. Terms can be arranged.

EIGHMY EQUIPMENT COMPANY
526 W. State Street Rockford, Illinois

CONCRETE BATCHING PLANT

Mixer trucks—bulk plant—sand & gravel pits. Complete operating equipment. In fastest city in the West. Write Box D-55, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Illinois.

EQUIPMENT WANTED

WANTED

Complete 2 Ton, cold asphalt plant. State price, location and condition. Must be available immediately.

Write Box D-50, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

WANTED

Concrete Joist Vibrating Table and Forms.

BLACK-BROLLIER, INC.
803 Blodgett Ave., Houston, Texas

EQUIPMENT WANTED—(Cont'd.)

WANTED!

Your surplus equipment
FMC BUYS and SELLS

Kilns • Dryers • Crushers
Mills • Tanks • Sifters
Mixers • Conveyors • Filters

COMPLETE PLANTS LIQUIDATED

First Machinery Corp.
157 Hudson Street **FMC** New York 13 N. Y.

WANTED

Concrete Block Plants complete or will pay cash for good used concrete machinery and equipment.

WM. M. CHASE
15 LINWOOD AVE. BUFFALO 2, N. Y.

WANTED

Belt Conveyor 60 ft. Portable similar to Barber-Greene.

BLACK-BROLLIER, INC.
803 Blodgett Ave., Houston 6, Texas

WANTED

LOCOMOTIVE, standard gauge, 18 to 25 ton gasoline or diesel.

BULK CEMENT BATCHING PLANT, capacity 300 to 600 bbls.

THE NATIONAL LIME & STONE CO.
FINDLAY, OHIO

MINERAL COLORS

MINERAL COLORS
for
BRICK MORTAR
STUCCO — PLASTER
"FINE BECAUSE OF THEIR FINENESS"
Ask for samples and recommendations
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

CONSULTING CHEMIST

HORACE J. HALLOWELL
Analytical and Consulting Chemist
323 Main St. Danbury, Conn.

Specialty—The Chemical Analyses of Carbonate, Phosphate and Silicate Rocks and Mineral Products.

POSITIONS WANTED

FORMER ARMY MAJOR with twenty years' experience as chief chemist and assistant chief chemist in modern cement plant desires a position, preferably the west coast. Am willing to go to Mexico or South America, if inducement is satisfactory. Write Box C-95, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

MAN thoroughly experienced in the latest improvements and processes of producing permanent plain and colored aggregates and the use of them in concrete units and exterior construction, etc., wishes to make permanent connection with equipped producer or newly formed company. Will accept position of responsibility or assume operating responsibility of plant with financial backing. Write Box D-54, c/o Rock Products, 309 West Jackson Blvd., Chicago 6, Ill.

CHEMIST—22 years' experience in the cement industry. Wet and dry process. Also research. Capable of supervision. Now employed at this type of work. Write Box D-41, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

WANTED — Position as Lime Plant Supt. 25 years' experience in operating shaft kilns using as fuel, wood, coal, natural gas and producer gas; manufacturing chemical, building, agriculture limes and crushed stone. Manual labor or mechanical in open pits and mine quarries. Can give good references. Write Box D-22, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

POSITION WANTED as Plant Supt. for Concrete Products, Ready Mix, Sand, Gravel, Crushing, Pulverizing Operation. 25 years' experience, in States or Overseas. Write Box D-48, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

CONSULTING ENGINEER

CORE DRILLING
ANYWHERE
We look into the earth
PENNSYLVANIA
DRILLING COMPANY
Pittsburgh, Pa.

H. D. RUHM
Consulting Engineer
PHOSPHATE
305 W. Seventh St.
Columbia, Tenn.

W. R. BENDY
312 Times Building
Long Beach, Calif.
CEMENT PLANT
MODERNIZATION DESIGN
OPERATION

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. LEE HEIDENREICH, JR.
Consulting Engineer
67 Second Street, Newburgh, N. Y.
Phone 1828

Operation
Plant Layout
Design
Appraisals
Construction

POSITIONS VACANT

MECHANICAL
DRAFTSMAN
WANTED . . .

. . . by midwestern cement manufacturer. Must be experienced in construction methods, machine installations, and plant layout. Steady position with advancement opportunities. State age, education, experience, references, last salary, and whether now employed. Address R. M. Cox, P. O. Box 2629, Kansas City, Missouri.

WANTED

I need an assistant for engineering work in cement plants; graduate engineer; free to travel; some experience in cement or similar industry desirable. Veteran preferred. This is an opportunity for a man with good personality who wants to learn. Mail address:

W. R. BENDY
312 Times Bldg. Long Beach, Calif.

SUPERINTENDENT WANTED

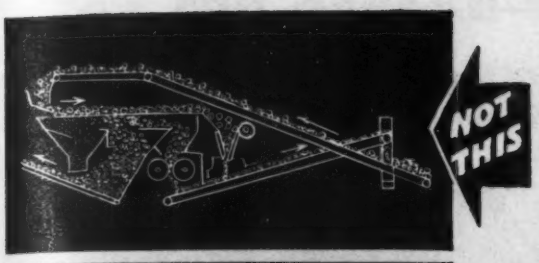
Portland cement manufacturer has opening for Plant Superintendent. Permanent position with old established company. Our own people know of this ad. In replying give age, education, experience, salary requirements and references.
Write Box C-77, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

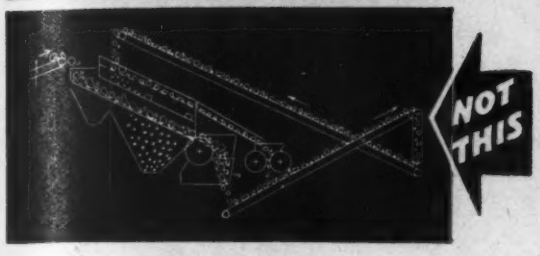
PLANT SUPERINTENDENT to assume responsibility for production and maintenance of plant located in the East, producing limestone products by the wet and dry process. Applicant should be familiar with crushing, grinding, screening, air classification, wet classification, filtering and drying equipment. In reply please give detailed information regarding experience, salary received and salary expected. Write Box D-52, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Illinois.

PARTNER WANTED by Owner of long established active Construction Equipment business in Central New York. Sales experience on heavy machinery desirable. Excellent opportunity for right man, preferably an Engineer. Write Box D-49, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

OPERATING FOREMAN to operate, control and supervise equipment in a plant located in the East, producing limestone products by wet process. Applicant should be familiar with grinding, wet classification, drying and filtering equipment. In reply please give experience, salary received and salary expected. Write Box D-53, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

INDEX TO ADVERTISERS





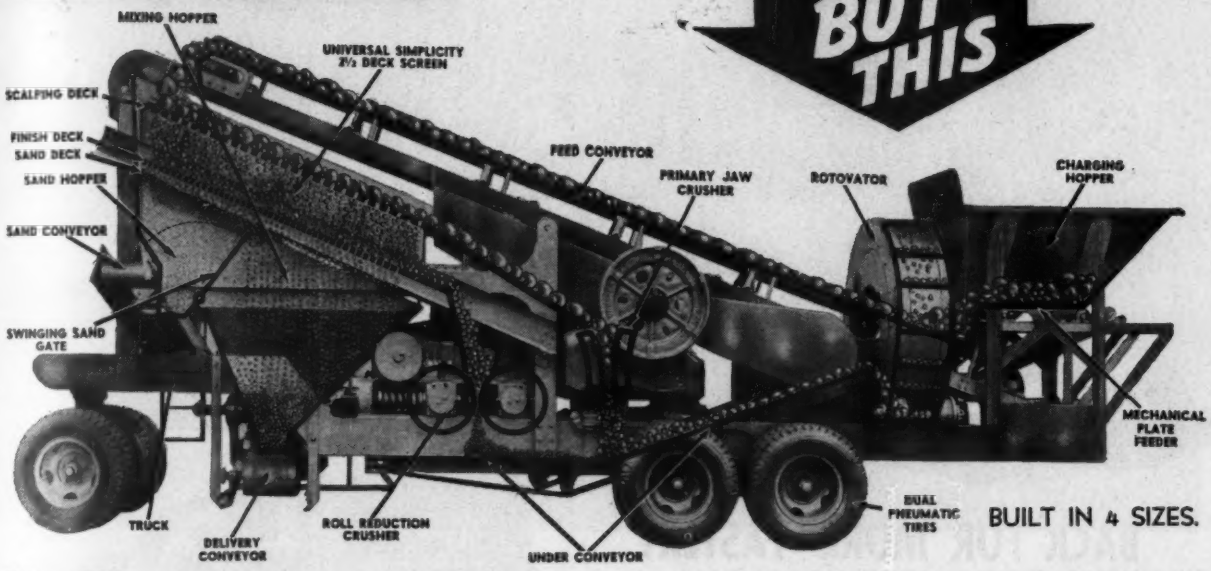
UNIVERSAL CRUSHING PLANTS ARE

ENGINEERED TO THE Nth DEGREE!

Here's a Typical Example—

There are three principal methods of screening material in a gravel or rock crushing plant. Universal engineers studied them all and applied the Scalping Deck Method of screening to Universal portable and stationary plants.

BUT THIS



BUILT IN 4 SIZES.

Not This

Horizontal screening method

Material travels across screen too slowly, increasing h.p. requirements, screen wire wear and blending, lowering plant output.

Not This

Bottom deck feeding method

Pit run material all passes over finish deck, increasing wear on its small wire. All material retained by finish deck goes through jaw crusher, increasing jaw wear and decreasing output. Most of the product of the jaw crusher goes to rolls, increasing roll shell wear and h.p. requirements. Plate between decks makes screen hard to balance, increases plant vibration.

Universal Scalping Deck Method

- Large oversize scalped to jaw crusher. No glutting with undersize. Result: More capacity, less jaw wear, less h.p. required.
- Rolls receive only material over finish (lower) deck—no large rocks or slabs. Result: Less roll shell wear and lower h.p. required.
- Heavy top (scalping) deck wire handles large rocks—protects finishing deck. Result: All of screening area utilized fully, longer screen wire life.
- Screen operates counterflow (uphill) against material. Result: Better gradation and higher capacity—screenable material not carried over to crushers.

The Scalping Deck Screening Method is only one of the many superior features of Universal's better engineered plants. Send for bulletins detailing other distinct features.

UNIVERSAL ENGINEERING CORP.
617 C Avenue West, Cedar Rapids, Iowa

FOR FORTY YEARS
UNIVERSAL
ROCK AND GRAVEL CRUSHING AND SCREENING PLANTS
ASPHALT PLANTS - SPREADEROLLERS

Dumptors Cut Costs in Strip Mines

BACK FOR MORE—FASTER!

Because they're back for more, faster, Koehring Dumptors keep shovels working at top speed in strip mine operations everywhere. They hustle coal from loading shovels to railside tipples—faster than any other hauling unit. They get rid of overburden as fast as the stripping shovels scoop it up. More trips per hour mean more yards per day, lower costs all around. Lower investment, too, because it takes fewer Dumptors to handle shovel output.

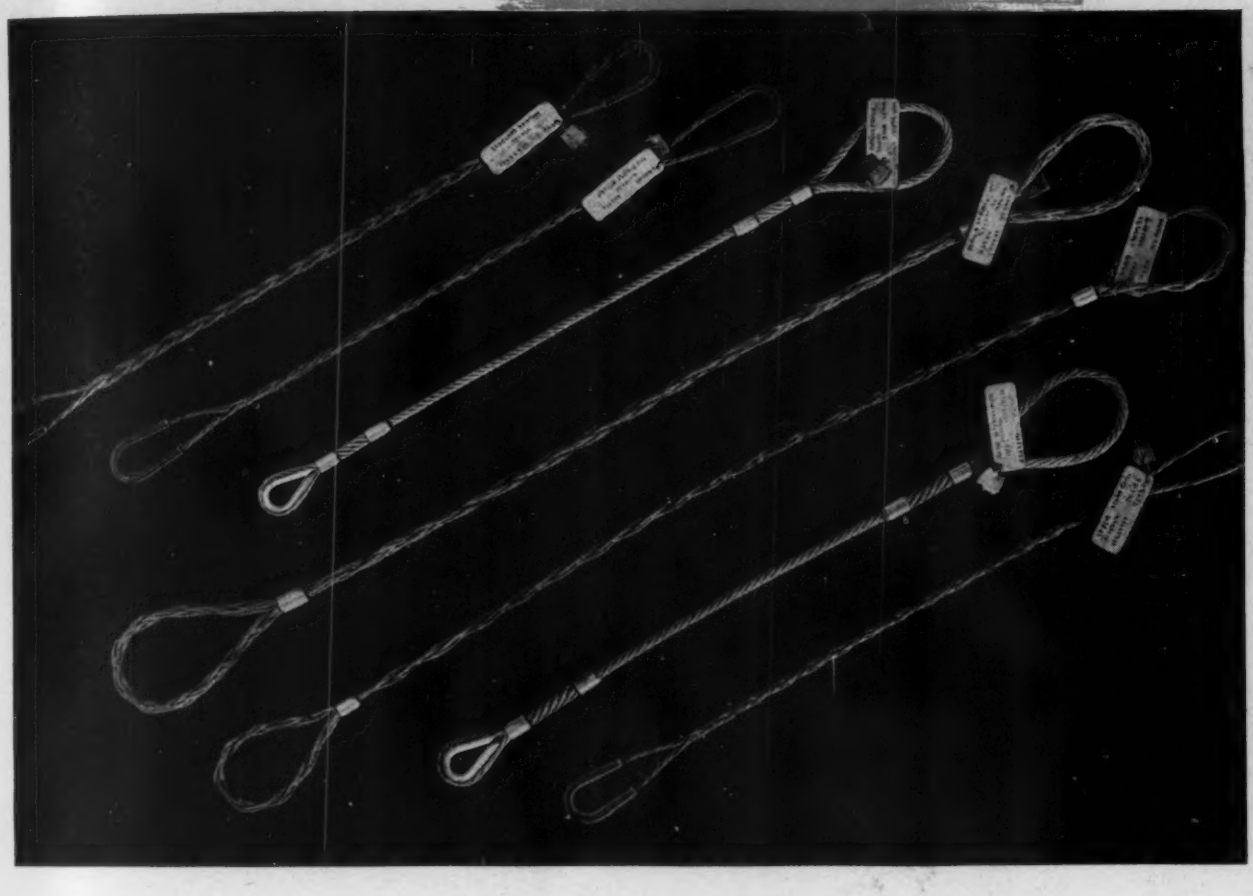
KOEHRING COMPANY
MILWAUKEE 10, WISCONSIN

Accurate spotting because driver faces loading unit . . . quick getaway with 3 fast forward speeds and 3 reverse speeds that are just as fast . . . high travel speed . . . instantaneous dump at the flick of a lever.

KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

You can depend upon AMERICAN CABLE ACCO Registered SLINGS



You get more than a sling when you order American Cable ACCO–REGISTERED. You get a sling that has been load–tested to twice its rated capacity before it leaves the mill. That assures you of mechanical reliability; gives you confidence in known strength and safety....You get a Certificate of Test and Registry which gives your sling a Serial number, states its type, certifies to the proof–testing and its established load capacity....You get a sling that is tagged with a metal plate on which has been stamped the sling's number, type, size and load rating in pounds. This tag is in front of your workmen at all times, still further assuring maximum safety.

American Chain and Cable is the only company offering registered wire rope slings – always made of TRU–LAY Preformed wire rope of Improved Plow Steel. Send today for free literature.

ARMY E NAVY

ACCO Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Emlenton, Pa., Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma, Seattle, Bridgeport, Conn.

AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

In Business for Your Safety

Your Output Needs:

1. **FAST CYCLE** — Balanced design and accurately controlled power gives the 120-B the speedy cycle needed for big output.

2. **SMOOTH OPERATION** — Operating reactions are smoothly blended for minimum stress and minimum power consumption.

3. **EFFICIENT DIGGING ACTION** — Long effective upper boom section, big sheaves, and single-part hoist concentrate maximum digging force at the dipper teeth.

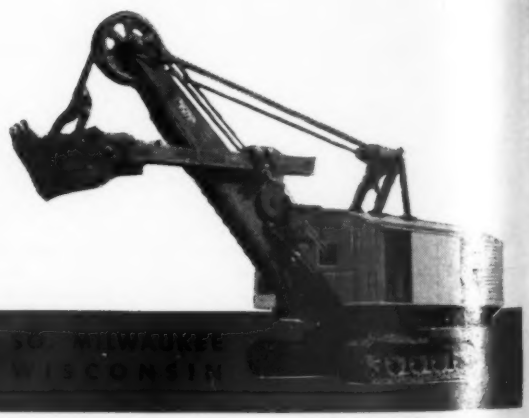
4. **BIG OPERATING RANGE** — Long range and high lift for easy handling of wide cuts and efficient loading into cars or trucks.

5. **FAST FULL SWING** — Twin vertical swing units, balanced for smooth action, give quick acceleration and deceleration.

6. **COMPLETE MOBILITY** — The 120-B can climb grades, dig in or out of a cut in either direction, go anywhere in the pit in a hurry.

7. **EASY CONVERTIBILITY** — The 120-B can be quickly converted from shovel to dragline in the field.

SL45C



BUCYRUS-ERIE COMPANY SOUTH MILWAUKEE WISCONSIN